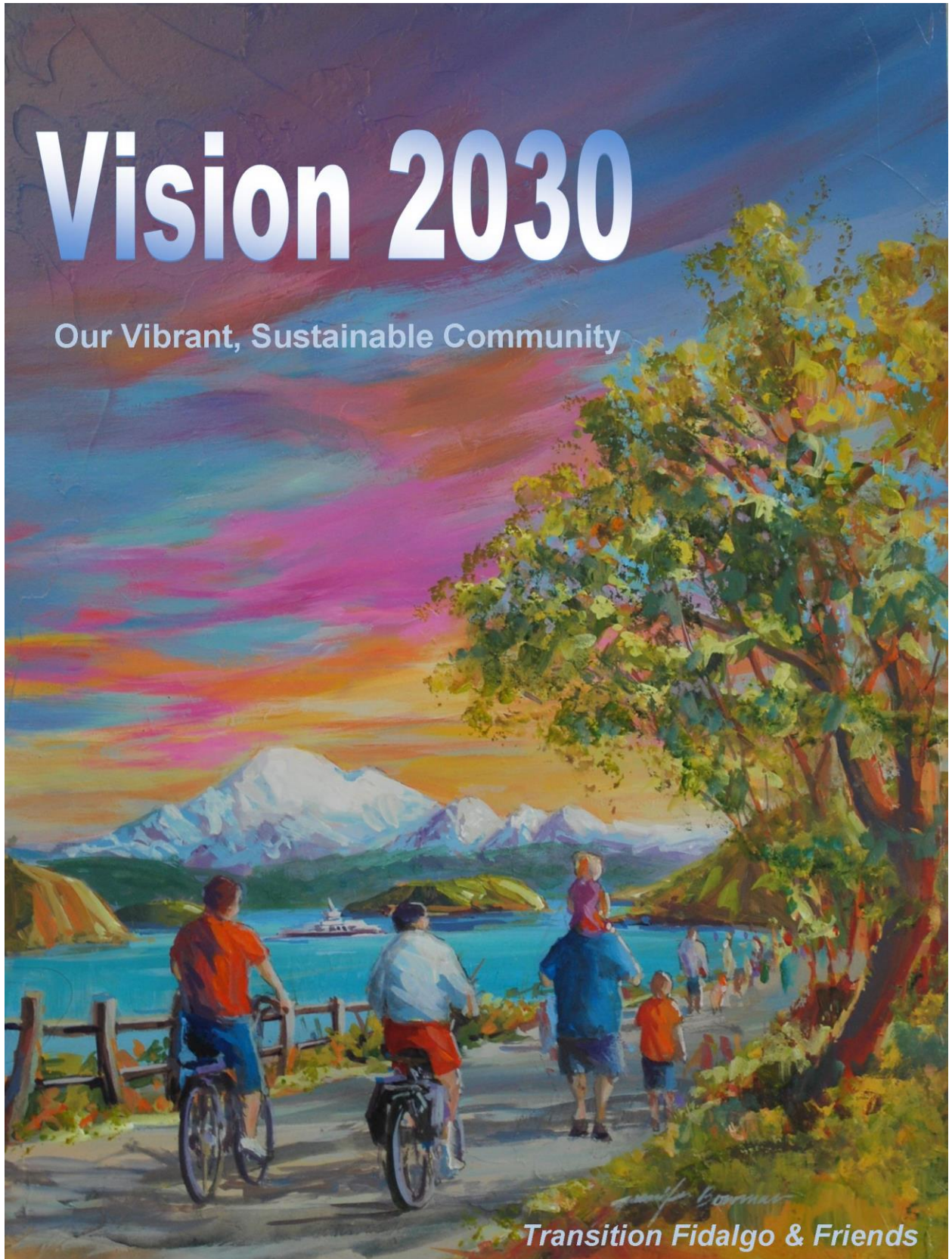


Vision 2030

Our Vibrant, Sustainable Community



Transition Fidalgo & Friends

VISION 2030

OUR VIBRANT, SUSTAINABLE COMMUNITY

Transition Fidalgo & Friends
2014

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Transition Fidalgo & Friends

Transition Fidalgo & Friends is an all-volunteer, 501.c.3 non-profit organization whose focus is to help our community reduce its reliance on fossil fuels and increase its ability to meet the challenges of climate change, energy volatility, and economic upheaval. We started the Anacortes Community Gardens, the Eat Your Yard project, Skillshare workshops, Time Bank, and more. TF&F began as Skagit Beat the Heat in 2006 and became part of the worldwide Transition movement in January 2011. For more info, please visit <http://transitionfidalgo.org>

Our thanks to Jennifer Bowman for her generous contribution of cover art.

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VISION 2030: EXECUTIVE SUMMARY

In April 2013, *Transition Fidalgo & Friends* hosted a gathering of over sixty Fidalgo and Guemes Island residents who brainstormed what a thriving community might look like in 2030, when communities everywhere would be increasingly challenged by climate, energy and economic impacts.

The vision that emerged was of a forward-looking, resilient community with a strong, localized economy, a secure food supply, clean transportation options, energy-efficient buildings, and engaged citizens who measure wealth not by consumption but by contentment.

After collecting the ideas generated at the April session, *TF&F* formed a Task Force to identify ways to make the vision a reality. That focus was set in the context of a couple of substantial challenges.

Climate stability and the conventional, easy-to-extract oil so basic to industrial society are essentially gone, creating profound implications for our future.¹ Unconventional fossil fuels (e.g. oil sands, shale oil) are not a sustainable substitute for conventional oil, and moreover, burning those fuels will further drive climate disruption. Global temperature is already on a trajectory that will increasingly challenge our ability to grow food, keep homes and families safe from extreme weather, build a strong economy, and plan ahead.

Fidalgo and Guemes aren't immune to these impacts; we're island communities only in a geographic sense. An energy and climate-challenged future will drop impacts squarely on our doorsteps, as already evidenced by the harm done to local shellfish industries from ocean acidification.

Although the challenges are great, there is much we can do to ramp up resilience and reduce our dependence on the fossil fuels that are overheating our world. In this document we envision a future full of possibilities: electric shuttles, community solar installations, a sustainable business incubator, pollinator pathways, food forests, a thriving green-marine industry, and a LEED Platinum mixed-use waterfront development, to name just a few. Many of the possibilities we've noted are already realities in neighboring communities and have been referenced to provide inspiration and direction.

To consider what it would take to live well in 2030, *Transition Fidalgo & Friends* looked at eight focus areas (arranged alphabetically, with no prioritization implied):

- **Economy** Steps to creating a strong economy should include an emphasis on localization to reduce transport costs and emissions, and to keep more revenue in the community. Other recommendations include establishing a City Economic Development Department; building amenities such as a mixed-use waterfront complex to attract innovators; and launching a

¹ We encourage you to read *Background Information: Climate and Energy* on pg. 69 for a better understanding of the context in which *Vision 2030* was written.

Sustainable Business Incubator to nurture new businesses. About one-third of Anacortes jobs are within industries heavily dependent on cheap, conventional oil (e.g. boat-building, construction, refining, tourism), leaving the local economy vulnerable to energy volatility. High-potential, *sustainable* industries for our area include Renewable Energy and Efficiency; Information Technology & Communications; Sustainable-Agriculture Specialties; Sustainable Tourism; and Green Marine.

- **Emergency Preparedness** A major threat to Fidalgo and Guemes Islands is the potential for isolation due to an earthquake, high winds, or storm-surge flooding. The key to insuring our communities' ability to "weather the storm" is advance preparation. Focal planning points include enough food, water, and other necessities to survive unassisted for several weeks; emergency power sources; reliable communication systems; and emergency aid training. Neighborhood groups should set up disaster response procedures following the protocols in Washington State's "Map Your Neighborhood" program. Anacortes should insure that its water supply line can withstand storm-surge conditions combined with sea-level rise.
- **Energy** Because more frequent and severe storms will likely create recurring power outages, access to an emergency power supply is a prime goal for homes and public facilities. In addition, to meet the challenges of rising energy costs and emissions, residents and businesses alike should be encouraged to install renewable energy systems that will continue to grow more affordable over time. Building codes should be amended to require solar installations where feasible in all new construction. Initiating energy audits and energy-efficiency campaigns will help eliminate wasted energy, the low-cost key to a sustainable energy future.
- **Food** Crop failures due to more "hundred-year" storms, floods and droughts are likely to affect agricultural regions around the nation and world, causing food prices to rise. Key strategies to insure food security include an increased diversity of local food sources; support of eco-systems (soil, water, pollinators); minimal use of fossil fuels to grow, process and deliver foods; a sufficient number of farmers; increased food production from backyard and community gardens; and education and infrastructure for processing and storing food.
- **Health** A warming world will create repercussions for human health, including heat stroke, breathing difficulties, new viruses, and the stress of adjusting to a changing world. Measures to maintain both physical and mental resilience include educating healthcare providers and the public about the ways climate change will affect human health, as well as how actions taken to mitigate and adapt can offer a number of healthful co-benefits. A community "health alert" system should be set up for incidents of heat waves, severe storms, and infectious diseases. Energy-intensive healthcare facilities should focus on conservation and sourcing power from renewables.
- **Homes and Neighborhoods** Rising gasoline and home-heating prices will stress household budgets, and city expenses for energy, transportation, and climate change mitigation will take

dollars away from infrastructure maintenance and investments in public amenities. Options to address these impacts include supporting mixed-use, walkable neighborhoods; promoting green-building incentives; initiating a home weatherization program; encouraging a sharing community (i.e. tool-lending libraries, neighborhood food hubs, time banks); and aggressively promoting the Accessory Dwelling Unit ordinance.

- **Natural Resources** Our region will see increased winter rainfall, summer droughts, continued ocean acidification, and steadily warming waters, all of which will have varying impacts on our natural resources. Potential strategies to help track, preserve, and strengthen ecosystems include creating a natural resource baseline inventory; establishing wildlife corridors; encouraging Low Impact Development; promoting sustainable nature tourism; engaging “citizen scientists” to monitor ecosystem changes; and strengthening Environmental Impact Statements.
- **Transportation** Islanders locked into car dependency generate more pollution and greenhouse gases, and face budget pressures from rising gasoline costs. To reduce reliance on fossil-fueled travel, clean transportation options for the future include electric cars and shuttles, pedicabs, and a bike co-operative. A “Complete Streets” roll-out would enable residents to drive less, save money, and engage in healthier “active” transportation. A paved bike trail connecting Mount Vernon to the state ferry terminal in Anacortes could serve as the cornerstone of a regional ecotourism industry.

It’s critical for communities to prepare now to meet the climate, energy and economic impacts that are already putting a strain on much of the country. We will need to rely more and more on ourselves in the years ahead; counting on relief from outside sources is a risky strategy. At some point the dollars will disappear as local, state, and federal governments become over-burdened with requests for aid. By making and funding the right choices now, we’ll ride out the future with far less financial hardship.

Even better, by making wise choices now, we’ll insure that the future communities of Fidalgo and Guemes will be places we’ll be grateful to live in. Much of what we do to prepare for climate and energy challenges can bring us what we all need and want: clean air and water; fresh, nutritious food; a close-knit community; better health; increased self-reliance and security; a rich diversity of wildlife; and a strong, adaptable economy. By acting now to build resilience, we’ll secure a future to look forward to, and one in which our children will remember us with thanks.

Transition Fidalgo and Friends
April, 2014

INTRODUCTION

"To create a positive, flourishing, nurturing and more resilient world, you'll first need a vision of what that could look like in practice." Rob Hopkins

In April 2013, over sixty people gathered at the Anacortes Senior Center for a meeting hosted by *Transition Fidalgo & Friends*. Islanders from young adults to grandparents came together to visualize a community that was thriving despite the challenges of climate, energy, and economic upheaval.²

Participants considered what such a community might look like in 2030 as it faced a wild-card climate and costs that cut deep into budgets. Would it have a robust, localized economy, and a food supply that could withstand price jumps and climate impacts? Would people be biking and walking more, living in more energy-efficient homes? Would they be healthy and happy, measuring wealth not by consumption but by contentment? Could *we* be that community?

After the April session, committees formed to answer these questions and put legs under the vision. This document is the result of a year's work, and our sincere hope is that readers will find inspiration enough here to fuel action. While we don't ignore the challenges ahead, we focus mainly on the intriguing possibilities.

What are a few of those possibilities? To build a better future we first need to imagine it, and in the pages that follow, we imagine abundant backyard and community gardens, streets lined with fruit and nut trees, and a repository holding seeds adapted to new climate stressors. There's a bustling food and dry-goods co-op, a sustainable business incubator, community solar installations, a tool library, and a waterfront plaza and event center where islanders enjoy cultural offerings. We move about on an extensive network of walking and biking routes, and take electric vehicles and pedicabs as needed. In 2030, we're working on projects that track climate impacts on land, water and wildlife, and are vigilant in safeguarding the nature we love. Together, we make decisions with regard for the long-term well-being of land and community, seeing ourselves as part of the web of life and honoring the earth as the source of life.

Today, in 2014, communities everywhere are waking up to both the probabilities and the possibilities ahead. We can learn a great deal from those who have already started to build a sustainable future, and you'll find many inspiring examples in *Vision 2030*.

A new day beckons. Now, as never before, we are called upon to use our ingenuity and resolve to turn challenges into opportunities, and to build a future as fulfilling as it is resilient. Let's start now to make *Vision 2030* a reality and an inspiration to all.

² See Background Information, p. 69, for an understanding of our current climate and energy situation.

VISION 2030: A THRIVING, SUSTAINABLE ECONOMY

For many years, shipping and rail transport fueled by cheap conventional oil helped build a booming economy that provided Americans with unprecedented wealth and mobility. Eventually, however, as the production rate of “easy” oil declined, transportation costs rose, sending shock waves throughout the economy.

By 2020, gasoline was \$5.17 a gallon³ and air fares had doubled, causing a steep drop in tourism. Communities whose fortunes depended on tourism were forced to look elsewhere for revenues. Businesses that relied heavily on the import of raw materials or the export of goods faced higher costs and lower profit margins. As the prices of goods and services rose, consumer spending, which drives 70% of the U.S. economy, slumped. Repeated economic contractions and high unemployment became America’s “new normal.”



Medium and heavy-duty trucks contribute 6% of U.S. greenhouse gas emissions (Source: <http://www.epa.gov/otaq/climate/documents/420f13033a.pdf>)
Credit: Vince Streano

Vulnerable to Resilient: How Anacortes Transformed its Fragile Economy

In 2014, concerned by the flood of scientific reports predicting climate disruption, rising fuel prices and economic instability, city leaders began a process of developing a resilient economy that would withstand future challenges. Transformation of the Anacortes economy started with a year-long *situation analysis*⁴ in which thousands of residents and business owners participated via surveys, webinars, and meetings to identify the strengths, weaknesses, opportunities and threats that would

³ 2020 cost estimate for a gallon of gas is based on: (1) a 2012 price of \$3.53/gallon, (2) the recent average annual gas price increase of 5.6% (i.e., from 2005 to 2013); Source: US Energy Information Administration;

http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMM_EPM0_PTE_R50_DPG&f=W.

⁴ A *situation analysis* is a comprehensive evaluation of (1) the external forces (i.e., economic, political, cultural, technological, and other factors) that could help or hinder an organization’s ability to achieve its goal as well as (2) the organization’s capabilities (i.e., strengths and weaknesses).

help or hinder the community's ability to develop a resilient economy. A preliminary SWOT analysis included the following findings:



By capitalizing on its unique assets, Anacortes could transform itself into a “vibrant, sustainable, waterfront community.” *Credit: Steve Morgan*

- Anacortes had unique assets (e.g., coastal setting; natural beauty; valuable ecosystems and habitats; outdoor recreation opportunities; a central location between Seattle and Vancouver, B.C.; home port to the San Juan Islands; marine-industry infrastructure; etc.) that could confer competitive advantages in several burgeoning industries;
- The local economy was vulnerable. The 2009 *Anacortes Future Project* concluded, “...42% of (taxable-retail-sales) revenue is coming from three business segments: construction, boat and auto sales. This imbalance raises concern about our future.”⁵
- Crude oil prices rose at a higher rate after 2006, and already-thin refinery profit margins contracted further. Oil demand plateaued in developed countries due to technological advancements (e.g., fuel-efficiency improvements).⁶ With rising crude prices, weakened demand, costly regulatory requirements and shrinking profit margins, North American oil companies were cutting costs by closing underperforming refining operations;⁷
- About one-third of Anacortes’ jobs were dependent on cheap, abundant oil. Oil industry trends threatened high unemployment, weakened consumer spending, decreasing sales tax revenue (i.e., 30% of Anacortes’ general fund),⁸ and future city budget deficits;
- Climate change was accelerating, and sea level rise, ocean acidification, and climate-change-induced storms, flooding, and erosion were projected to intensify in the Northwest.⁹ Rising costs from climate change mitigation, storm damage and emergency services would strain

⁵ *Anacortes Futures Project*. 2009, page 3

⁶ “Global Trends in Oil & Gas Markets to 2025.” LUKOIL, 2013. Page 8

⁷ *Ibid.*; LUKOIL, page 24

⁸ *Anacortes Futures Project*. 2009, page 3

⁹ “Draft Climate Assessment Report,” National Climate Assessment Development Advisory Committee, 2013. Page 6 <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-chap1-execsum.pdf>.

city resources;

- Preliminary research suggested that there were at least five lucrative, fast-growing industries in which Anacortes' strengths could provide a competitive market advantage (please refer to the Appendix B for a description of *Five High-Potential Sustainable Industries*);
- *Localized economies*¹⁰ offered multiple advantages, including: local retailers return three times as much revenue to recirculate in a community compared to chain retailers; increased local wealth; and reduced reliance on costly, toxic freight transport, which generates 14% of greenhouse gas emissions;
- *Business incubators*¹¹ grow businesses and create jobs. In 2011, the average North American incubator startup began providing full-time employment for four workers and generated annual revenue of almost \$306,000.¹²

“Every dollar of public money invested in small business incubators generates \$30 in return.”

Juli Wilkerson,
Washington State
Department of Commerce

Based on the insight gained during the situation analysis, Anacortes crafted an *Economic and Community Development Plan* with a ten-year goal: develop a thriving, sustainable economy that minimizes cyclical downturns, provides living-wage jobs, and increases sales tax revenue. A key strategy was to recruit *sustainable businesses*¹³ that would collaborate with each other and with regional companies to capitalize on the City's strengths in pursuing burgeoning market opportunities.

In 2020, Anacortes reached two major milestones in its ten-year plan. The city launched the *Skagit Sustainable Business Incubator* (SSBI) with twelve green-business startups. The 30,000 square foot LEED Platinum SSBI, located in the City's Willette Business Park, provided low-cost support

¹⁰ A *localized economy* is one in which most goods and services are purchased from local businesses. A 2012 Bainbridge Island study showed that for every dollar spent at locally owned, independent businesses, three times as much revenue recirculates in the local economy as compared to purchases at national chain retailers. American Independent Business Alliance. <http://www.amiba.net/news/september-2012>

¹¹ *Business incubators* provide facilities, services, and resources that support the development and growth of entrepreneurial (i.e., start-up) companies. “The most common goals of incubation programs are creating jobs in a community, enhancing a community's entrepreneurial climate, retaining businesses in a community, building or accelerating growth in a local industry, and diversifying local economies.” (Source: National Business Incubation Association).

¹² “2001 State of the Business Incubator Industry.” National Business Incubation Association. http://www.nbia.org/resource_library/faq/#8

¹³ *Sustainable (aka green) businesses* are enterprises that have an enduring commitment to environmental principles in their business operations and no negative impacts on the environment, community or economy.


services and facilities (e.g., office, research and development, and warehouse space as well as equipment and business support services) to carefully selected sustainable business startups. In exchange for startup support, the entrepreneurial companies agreed to:

- operate the business in Anacortes for at least five years, and
- hire Skagit County residents for living-wage jobs.

The startup business incubator aligns with the Washington Economic Development Commission's *Driving Washington's Prosperity* recommendations for investing in entrepreneurship as a key driver of economic development: "Washington should strengthen the innovation ecosystem that connects researchers, entrepreneurs, mentors, angel/venture funding, incubators and manufacturers.... Start-up companies and the formation of new regional innovation clusters is the long-term, jobs-creation engine of our economy...most new jobs are created by firms less than five years old..."¹⁴ For more information about Washington's small business incubators as well as state and federal grant funding for business incubators, please see the *Appendices C and D*.


The second early achievement was the completion of a LEED Platinum mixed-use waterfront development, which included a small convention (i.e., event) center, eco-hotel, condominiums, and office and retail space. This "jewel in the crown" provided Anacortes with much-needed infill housing,¹⁵ an "outdoor living room" where islanders gathered and met, as well as a venue for performing arts, cultural, educational and community events. The improved *quality* of life enabled Anacortes to attract young people, working families, entrepreneurs and the *Creative Class* talent¹⁶ needed to diversify and strengthen the economy.

Despite worldwide economic and climate chaos, the Anacortes community thrived. Today, the vibrant, sustainable waterfront community continues to experience an excellent quality of life and a resilient economy dominated by locally-owned small businesses focused on the *triple bottom line* (i.e., profits, people and the planet).



There are three types of organizations: those who *make* things happen, those who *watch* things happen, and those who *wonder* what happened.

Mary Kay Ash (*paraphrased*)



¹⁴ "Driving Washington's Prosperity." Washington Economic Development Commission, March 2013. Page 32 <http://www.wedc.wa.gov/Download%20files/2013StrategicPlan.pdf>

¹⁵ *Infill housing* (aka redevelopment or land recycling) is the insertion of new housing units into an already-built-but-underutilized site, neighborhood, or building.

¹⁶ The *Creative Class* (aka Creatives) refers to a segment of the labor pool comprised of highly educated and engaged innovators, knowledge workers, intellectuals, and artists.

Potential Strategies/Actions

Plan for a Thriving, Resilient Economy

Step One: Conduct a Situation Analysis

The first step in building a robust economy is developing a comprehensive understanding of (1) the market opportunities and threats facing Anacortes now and in the future and (2) the City's capabilities (i.e., strengths and weaknesses). Use all reasonable means (i.e., focus groups, phone and online surveys, webinars and meetings) to involve a majority of residents and business owners in the situation analysis. Achieving the aggressive goal of transforming the economy in ten years will require broad community consensus about Anacortes' market and economic realities.



Responsible nature and wildlife travel are among the fastest growing sectors of the tourism industry. *Credit: Vince Streano*

Step Two: Conduct Feasibility (Cost-Benefit) Analyses

Preliminary research suggests that there are at least five fast-growing industries in which Anacortes' strengths could provide a competitive market advantage. Evaluate the potential of these and other fast-growing industries to complement the "vibrant, sustainable waterfront community" brand image and provide economic resiliency in turbulent times:

Sustainable Tourism: Businesses that provide visitor experiences in a manner that protects the cultural, economic and natural environments

Green Marine: Companies that design, develop, manufacture, distribute, outfit/offload, service, and operate sustainable commercial and recreational watercraft and marine equipment

Clean Energy: Enterprises that (1) develop, produce, or distribute energy from renewable sources (e.g., sun, wind, waste, etc.) and (2) provide goods or services that conserve energy

Specialty Sustainable Agriculture: Businesses involved in the production or processing of food, fiber, forage or fuel with three goals: a healthy environment, profitability, and socio-economic equity

Information Technology and Communication: Companies involved in the design, development, application, implementation, support or management of computers and telecom systems that store, retrieve, transmit or manipulate data

Step Three: Develop a Strategic Plan

Considering the insights from the situation analysis and the resources available for economic development, set a realistic goal for the Plan. Next, set the Plan's objectives (i.e., the specific, measurable results that must occur for the goal to be met). Each objective should relate to exploiting

a strength, capitalizing on a market opportunity, minimizing a weakness, or mitigating a market threat. Objectives describe the specific market changes desired (e.g., a particular level of industry revenue, growth, market share or market penetration; a specific level of change in consumer awareness, brand attitudes, purchase intent or inquiries; etc.).

When the goal and objectives are set, develop marketing *strategies* (i.e., the optimal actions and policies on which Anacortes will concentrate all of its economic-development resources and efforts). Integrate insights about Anacortes' capabilities, consumers, competitors and the macro-environment, and choose the most-advantageous, synergistic strategies for achieving the Plan's objectives.

Step Four: Develop an Action Plan

Action plans detail the specific activities (and expenditures) that must occur to achieve the Plan objectives and goal. The action plan (i.e., the “who, what, where, when, and how much” of a plan) assigns tasks to specific organizations (or individuals) with specific timelines.

Aggressively Implement the Action Plan

Create a City Economic Development Department to collaborate with the Washington Department of Commerce, Economic Development Association of Skagit County, Anacortes Chamber of Commerce and other relevant organizations to (1) recruit sustainable businesses and (2) help existing businesses grow. Typical duties of economic development staff include: attending target-industry trade events, supplying customized research and information for prospective businesses, and providing free assistance for expansion of existing businesses.

Invest Now in Community Improvements to Attract Future Talent

The Creative Class is a driving force in economic development in post-industrial cities, according to Richard Florida, Director of the Martin Prosperity Institute at the University of Toronto. The Creative Class is comprised of highly educated innovators and knowledge workers whose jobs involve problem-solving and creating new products and ideas. Florida's research shows that cities attracting Creatives prosper, and cities losing Creatives stagnate.

Creatives are attracted to cities that fulfill their cultural, creative, and technological needs (e.g., Seattle). Creatives tend to be environmental and social activists, culturally unconventional, independent and



“Place” is important to the educated Creatives. They prefer vibrant neighborhoods (i.e., street culture, cafes and restaurants, arts, etc.). *Credit: Damian Van Holten*

experiential. They prefer living downtown to be close to exciting activities.

Anacortes has both strengths and weaknesses for attracting Creative Class workers:

Strength	Weakness
A strong sense of community (i.e., many fraternal, social, and professional groups). “Business building” is a social process; relationships across diverse groups help entrepreneurs succeed.	A lack of amenities and venues for social interaction (i.e., a cultural “scene”), especially during non-working hours.

Anacortes can rectify this weakness by creating venues where people of all ages and backgrounds can meet and build social networks. A performing arts venue or an “outdoor living room” would:

- help attract the human capital needed to strengthen our economy and create higher-paying jobs, and
- support development of the Anacortes brand image (i.e., a vibrant, sustainable waterfront community).

Build Consensus and Support for Sustainable Economic Development

Throughout the planning process, conduct an information campaign that increases public, legislative and industry awareness of and support for sustainable economic development. It is imperative that Anacortes citizens and business owners understand the realities of the market and economic environments. Stakeholder support and public-private partnerships will be crucial in allocating the resources needed to create new public, recreational, and cultural amenities that will attract Creatives, entrepreneurs, visitors, and high-paying jobs to Anacortes.

Vision 2030: Economy

Overall Goal	Near Term Goals (Next 5 Years)	Intermediate Goals (6-10 Yrs)	Long Term Goals (10-20 Yrs)	Experts/Stakeholders/ Partners
<p>Develop a thriving, sustainable, localized economy that minimizes cyclical downturns, provides living-wage jobs, and increases sales-tax revenue.</p>	<ul style="list-style-type: none"> • (2014) Conduct a SWOT analysis as well as feasibility (i.e., cost-benefit) analyses of high-potential industries. • (2014) Implement communications campaign that builds stakeholder understanding and support for <i>sustainable economic development</i>. • (2014) Establish, fund, and staff a City Economic Development Department. • (2015) Create an economic development plan with (1) a realistic goal, (2) measurable objectives, (3) strategies targeting 1-2 <i>highest-potential</i> industries as well as <i>Creative Class</i> workers, and (4) an action plan. • (2015) Start cleaning up toxins in our environment. • (2015) Start developing the community amenities necessary to improve quality of life and attract <i>creative class</i> workers. • (2015) Begin planning for a 2020 launch of the LEED Platinum green-business incubator. • (2015) Begin planning for the LEED Platinum mixed-use waterfront complex. • (2016) Aggressively promote Anacortes' unique economic transformation (i.e., build a <i>buzz</i>) • (2016) Begin implementing (and frequently evaluating) the plan. 	<ul style="list-style-type: none"> • (2019) Begin promoting Anacortes to Creatives as and the public as “a vibrant, sustainable waterfront community.” • (2018) Aggressively promote the opening of the new, sustainable waterfront complex. • (2020) Launch the green-business incubator with 12 (or more) small-business startups. • Continue cleaning up toxins in our environment. • Continue aggressively courting new sustainable businesses. • Continue evaluating and updating the Economic Development Plan. 	<ul style="list-style-type: none"> • Continue aggressively courting new sustainable businesses • Continue evaluating and updating the economic development plan. • Continue promoting (1) Anacortes unique transformation, (2) the pristine environment and ecosystems, and (3) regional ecotourism. 	<ul style="list-style-type: none"> • Policymakers: City, County, State and Feds • Nonprofits and Public Agencies • Research and Education Stakeholders • Industry • Investors • Anacortes Residents • Other relevant stakeholders

VISION 2030: EMERGENCY PREPAREDNESS

On June 15, 2030, a national press release announced that the Fidalgo and Guemes Island communities would receive the prestigious award of “Most Resilient Community.” Only 25 such awards have been given out since 2020, when the Federal Emergency Management Agency (FEMA) decided to recognize communities that have done the most to prepare for weather-related problems linked to climate change. The awards look at how well candidate communities have forecast potential disasters in their locale, and the steps taken to avert or mitigate the impacts of these events. Special consideration is given for actions that anticipate related factors, such as isolation from the mainland due to flood-related events, and large-scale forest fires resulting from prolonged droughts.¹⁷



Credit: wallyir

In 2015, the communities of Fidalgo and Guemes Islands held a number of workshops to assess their vulnerabilities to weather-related challenges and to potential disasters such as earthquakes. Workshop attendees then identified what must or should be done to survive the events identified.¹⁸ Coping strategies were built around four key actions: 1) prepare, 2) respond, 3) recover, and 4) mitigate and prevent. The outcome from these workshops was summarized as:

- Neighborhoods must be able to survive for periods of a few days to several weeks without services or the ability to obtain water and food from conventional sources.
- Emergency centers should be established to care for residents that have been isolated or who have lost their homes.
- Functioning communication systems are needed in the event phone service is disabled.
- Reliable sources of emergency power and water must be established.
- Individuals need to be trained to provide emergency first aid and emergency response.
- There will be increased limitations associated with building in flood-prone locations.

¹⁷ *Swinomish Climate Change Initiative: Impact Assessment Technical Report*. Swinomish Indian Tribal Community, Office of Planning and Community Development, La Conner, WA. 2010 http://www.swinomish-nsn.gov/climate_change/Docs/SITC_CC_ImpactAssessmentTechnicalReport_complete.pdf

¹⁸ To learn more about what actions we can take to cope with disasters, see the American National Red Cross: <http://www.redcross.org>; Federal Emergency Management Agency: <http://www.fema.gov>; National Oceanic and Atmospheric Administration: <http://www.noaa.gov>; and FEMA’s Community Emergency Response Teams: <http://www.fema.gov/community-emergency-response-teams>

- Wildfire risk mitigation programs should be implemented.

Following the workshops, it became evident that actions taken to prepare for emergencies were well worth the time and investment as ever more frequent and intense storms rocked communities throughout the U.S. and the rest of the world. Although Fidalgo and Guemes Islanders were not spared from storm-surge flooding, windstorm damage, and forest fires,¹⁹ advance preparation lessened impacts and kept residents on their feet.

In addition to reducing the suffering and financial impacts of disasters, advance preparation also allowed the costs of mitigation to be spread out over many years. Communities that did not prepare in advance were less resilient and suffered tremendous damage, including the overwhelming costs of recovery. Depending on FEMA to come to the rescue was found to be an unwise strategy; the government agency became increasingly strained by the sheer number of aid requests and was forced to drastically scale back federal assistance.

Today in 2030, Fidalgo and Guemes Islanders continue to thrive despite occasional setbacks from storm, wind, and fire events. Advance and ongoing planning allow our communities to ride out the worst, quickly recover, and continue on. Although it's likely that more upheaval is still to come, a strong commitment to preparation is viewed as the best course to keeping our communities one step ahead and ready to respond.

Potential Strategies/Actions

Emergency Preparedness Planning

It will take citizens, businesses, and local government working together to build the resilience needed to recover from events that will inevitably shake us loose from our moorings. Communities that have prepared for these eventualities will be in the best position to respond.

A key threat to the Fidalgo and Guemes Island communities is the potential isolation for varying periods of time due to an earthquake, severe windstorm, mudslide, or flooding. To help increase our individual and collective resilience, we suggest the following:

Prepare emergency sources of food and water. Households, businesses, and local government should plan on having food, water, and other necessary supplies to survive unassisted for weeks at a time. Many measures required for self-sufficiency are not onerous or costly; for example, stockpiling food



Credit: sloda

¹⁹ *Swinomish Climate Change Initiative: Impact Assessment Technical Report*. Op.cit.

and water over time can be easily accomplished without huge expense and will greatly improve a family's ability to "weather the storm."

Have an emergency power source. A power source is a critical capability that must be established ahead of a disaster event. In its simplest form, this can be a small portable electric generator stored with a quantity of stabilized gasoline.²⁰ The ability to generate on-site electricity will make heat, lighting, and refrigeration available. A source of electricity will also make it possible to run power tools for repairs.



Portable generator. Credit: Eric Shen

Plan to provide emergency shelters throughout the community.

These will give people displaced by a large fire, earthquake, epidemic or other disaster a place of refuge. Shelters should be able to house a few hundred residents and should have equipment, water, food, and medical supplies to last up to four weeks.

Form neighborhood groups.

Such groups can coordinate the supplies required to become self-sufficient for a four-week period. Follow the guidelines provided by Washington State's "Map Your Neighborhood" program to create written procedures that include (1) the nine steps to take immediately following a disaster; (2) the skills and equipment of each household; (3) a neighborhood map locating natural gas and propane sources; and (4) a list of people needing special assistance. Neighborhoods also need to decide where to meet in emergencies, and may want to stock tools and other equipment for emergency use. Block captains can be chosen to help check on other neighbors, and phone trees should be established to connect everyone to emergency alerts. Remember: "In a disaster, your most immediate source of help is the neighbor living next to you."

Set up a reliable communications system. In the aftermath of a disaster, communication may be a challenge. Telephone service can be disrupted due to downed lines, overloading, or loss of cellphone towers. Each neighborhood should set up informal methods for communicating with each other, such as a system of GMRS (general mobile radio service) radios strategically placed in homes, and/or ham radios to keep in touch with neighbors and to communicate with people on the outside.

Encourage disaster response and emergency first aid training. A majority of the community should receive Community Emergency Response Team (CERT) education and/or Red Cross Training.

²⁰ Fuel stabilizers prevent degradation of gasoline that is stored long-term.

Mitigation & Prevention



Sea-level rise awareness event organized by Transition Fidalgo & Friends, April 2013.
Credit: Vince Streano

Floods It is likely that sea level rise and ever higher storm surges will pose unavoidable flooding hazards in the future. Advance planning to mitigate the damage done by storm surges and flooding will be critical to the ability to recover quickly and minimize financial impacts. The Cities of Anacortes, Mount Vernon, and Burlington should work with Skagit County to restrict building in anticipated flood-prone locations.

The City of Anacortes should also take precautions to make sure its water supply line can withstand storm-surge events if sea level rises five to six feet from present levels. Estimates from recent studies²¹ indicate that sea level rise combined with a three-foot storm surge could

result in flooding eight feet higher than present norms by 2100. Additionally, Anacortes should make sure that plans and preparations are in place to draw emergency water from nearby lakes and have local water treatment facilities available. Individuals should develop their own backup water supplies, such as cisterns and rainwater catchment with filtration systems.

Fires Local cities and the county should adopt and promote proactive policies that prepare communities for increasing fire danger. One such program – FireWise²² – offered by the National Fire Protection Association, provides education materials and online training courses about how to prepare at the home and community levels. The Shelter Bay community has implemented this program and could be consulted about what has worked for them.

²¹ Swinomish Climate Change Initiative: Impact Assessment Technical Report. Op.cit.

²² See www.firewise.org

Vision 2030: Emergency Preparedness

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	Emergency Shelters built or designated to accommodate different areas on Fidalgo & Guemes Islands	Work to evaluate the need for and location of emergency shelters. --Educate the public and government about the need for emergency shelters.	Continue public education about location of public shelters		City Depts Red Cross
2	Adopt "Map Your Neighborhood" program. <ul style="list-style-type: none"> Develop community resilience programs Promote adoption at the community level 	MAP Your Neighborhood Meetings http://www.emd.wa.gov/myn/myn_resources.shtml	Continue	Continue	City Depts Home Owners Businesses
3	Establish and maintain an emergency communication system(s) able to function after a disaster.	Employ MyStatesUSA, which has the capability to notify via pager, cell phone, or land-line pre-recorded messages or text. (Major earthquakes interrupt phone service which limits its success.) --Establish Emergency Alert Systems (Radio) and GMRS, which are more resilient.	Maintain systems	Maintain system	City and County governments Neighborhood volunteers
4	All neighborhoods have basic emergency response training.	Train select neighborhood members in Community Emergency Response Team (CERT) program offered by FEMA, and in Red Cross First Aid/CPR.	Continue training programs	Continue training programs	City and County governments Homeowners Business owners
5	Everyone has an emergency kit available for quick access.	www.SafeintheSound.org <ul style="list-style-type: none"> Family Disaster Plan Disaster Supply Kit Checklist Emergency Contact Card Disaster Preparedness Calendar 			City Property Owners Business Owners

Vision 2030: A Vibrant, Sustainable Community

6	Pet Preparedness (Pets not allowed in Red Cross shelters)	Learn about pet preparedness and make pet disaster kits as well. http://safeinthesound.org/be-informed/pet-preparedness http://www.charlierandallpetfoundation.org/			
7	Building codes on all new construction requires alternative energy systems, water catchment, etc.		Revise local codes and promote emergency power systems and backup water supplies.		City and County Businesses Homeowners
8	Develop backup water supplies at the local community level.		Potable water is a critical factor in sustaining our community during a disaster. Use lakes as back-up water sources, also wells, rain catchment, and cisterns. --Develop methods to transport and purify water at these sources.		City and County
9	Critical infrastructure services such as roads, communications, sewage treatment, etc. are located out of harm's way.	Develop plans for infrastructure protection.	Obtain funding to implement planning.	Implement infrastructure projects.	City and County governments
10	Establish alternate transportation for critical services, such as supplying critical supplies.	Develop plans and establish agreements for alternate transportation services.			City and County governments Business

VISION 2030: CLEAN ENERGY AND EFFICIENCY

In 2030, natural disasters across the country and world continue to make the nightly news. Climate-related events are straining community resources and are projected to increase in the coming decades. For the last several years, our region has experienced more frequent intense storm events and recurring power outages.

The natural gas boom in the 20-teen years did not hold its cost-competitive edge. Worldwide markets used more domestically-produced natural gas, and regulatory constraints on U.S. hydrofracture drilling drove prices higher. Consequently, the spiraling cost from using fossil fuels for power needs has taken a big bite out of household budgets, while financial crises due to emergency response demands are straining support programs such as food assistance and subsidized health care.

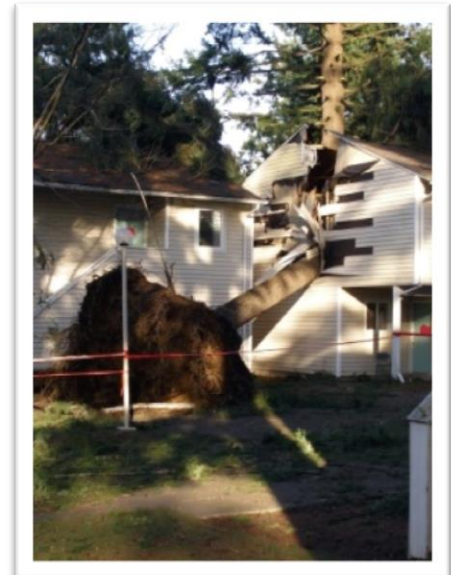
The communities of Fidalgo and Guemes Islands have weathered the challenges of repeated power outages and rising energy costs thanks to early planning that reduced power needs and ensured a strong, secure supply of electrical power. In 2030, the cornerstone of resilience is the use of electricity for domestic and commercial power demands, although the judicious use of fossil fuels for emergency power remains part of the long-term strategy.

Back in the 20-teens, the two island communities decided that a power supply should:

- be provided at a reasonable cost (relative to household budgets)
- be reliable, even in the event of a disaster
- be within people's capability to implement
- include designs for emergency power

Electricity was the only energy source that could meet these criteria. In 2030, Fidalgo and Guemes Islands' electrical-power strategy is built upon the following:

- *Grid Power:* As the cost of fossil fuels continued to rise through the early 2000s, electricity became the power source of choice. In 2030, the PSE utility power grid has remained the primary source of power.



Hurricane-force gusts during the 2006 winter windstorm in western Washington caused millions of dollars of damage. 1.2 million PSE customers lost power.

Credit: Ryan Kitko

Wind and solar are the cheapest sources of electricity in 2030. Washington State's foresight in mandating a 15% renewably-generated electricity standard in 2006²³ helped hold the line on electrical price increases. The mandate was so popular the standard was increased to 35% by 2029.

- *Emergency Power:* In 2030, emergency-power capability at business, residential, and government levels is critical. The increasing frequency and higher winds of winter and spring storms²⁴ cause numerous electrical outages each year. Fortunately, most residences, businesses, and government buildings on Fidalgo and Guemes Islands have emergency standby power systems in place. Power outages that routinely last one to two weeks are manageable.

- *Major facilities (2030):* Most emergency-generation systems are the classic diesel (or gas) generator package. Hospitals have large emergency-power systems. Some schools have diesel generators. All of the systems provide power to select loads only and not to the full facility.



Commercial generator. Credit: Dwight Burdette

- *Residential (2030):* Home systems include small gas generators and solar power systems, including grid-tied²⁵ solar arrays with emergency-power capability (Sunny Boy US-TL series²⁶), stand-alone PV systems, and solar-powered generators. Though the cost of fuel has increased dramatically, small gas-powered generators use only small amounts, and the overall costs to operate these generators for short periods are manageable.
- *Renewable Energy:* By 2030, Anacortes is one of the greenest communities in the Pacific Northwest. Over 11% (1,200+) of residences have a rooftop or yard-mounted solar photovoltaic (PV) array. For many years now, all new construction or major remodels (residential and commercial) have been required to use two watts per square foot (house footprint) of PV-generated power, or to make efficiency upgrades to reduce overall energy consumption by 75%. Most city-owned buildings have PV systems as well, thanks to collaboration between community groups and city leaders. While most buildings have simple grid-tied PV systems, there are some with battery back-up, which provides power when the grid is down. Many grid-tied PV inverters²⁷ now also have the ability to provide a small amount of power during outages without using batteries.

²³ Washington Renewable Energy Standard-RCW 19-285

²⁴ *Swinomish Impacts Assessment Technical Report*. 10/2009. Swinomish Indian Tribal Community

²⁵ This is a type of PV system that does not use batteries for energy storage, but can still produce power for household use during a power outage while the sun shines.

²⁶ Inverter offered by SMA Solar Technologies

²⁷ An inverter is a device that converts direct current into alternating current.

- *Energy Efficiency:* In 2030, Fidalgo and Guemes communities are models of energy efficiency. Over 15 years ago, local residents joined forces to plan and imagine what the future would bring. The goal they set was to reduce household, business, and government energy consumption by 38% or better by 2050.²⁸ That goal was achieved by 2029, as the cost savings from embracing energy efficiency became apparent. One highly-motivating energy-conservation approach used by businesses is a cost-savings sharing program, which gives a portion of the money saved to participating employees.



Solar energy seminar at a Transition Fidalgo & Friends skillshare workshop. *Credit: Jan Woodruff*

An energy audit is the first step in determining energy efficiency. It assesses a building's leak tightness²⁹, sources of heat loss, electricity consumption, etc. Most improvements recommended by the auditors pay for themselves in three to four years, through the energy saved each month.³⁰

Key audit recommendations typically include:

- Switch to more efficient lighting, such as LED light bulbs
- Insulate hot water heaters
- Seal up air leaks – caulk and fill any cracks or voids
- Upgrade older appliances and heating systems to Energy Star-rated units
- Add insulation to critical areas
- Eliminate unwanted electrical drains (phantom loads)

Fundamental to the success of the energy audits in 2030 is the “One-Stop Energy Shop” program implemented by Sustainable Connections through the Skagit Community Energy Program. A simple call kicks off the process with an audit, which generates a recommendations report, a list of qualified contractors, a financing package through a local bank, and oversight to ensure quality work. The ease of this process has encouraged many to sign up.

The other building block to achieving the communities’ energy-efficiency goals is requiring high-efficiency building standards for all new construction.

²⁸ *Reinventing Fire*. Rocky Mountain Institute, 2011. Page 86

²⁹ Leak tightness is typically about cold air leaking into the house through cracks and openings (bad caulking, failed gaskets, cracks in walls, etc). Heat loss is the migration of heat through insulation, through windows, etc.

³⁰ Community Energy Challenge, Sustainable Connections. Bellingham, WA.

Finally, education on energy consumption and reduction is critical to resilience in 2030. A popular community-education program trains citizens to weatherize their homes, initiate other energy-efficiency measures, and pursue cooperative purchases of energy-efficient products and services.

Potential Strategies/Actions

The Present Situation

Fidalgo and Guemes Islands are currently served power from the Puget Sound Energy (PSE) supply system, which is tied into the BPA (Bonneville Power Administration) main West Coast grid (covering Washington, Oregon, California) in a Sedro-Woolley distribution station.

Anacortes is served by five major transmission lines from this BPA distribution hub, which supplies power to the Summit Park distribution station near March's Point. These five lines, four at 115kv and one at 230kv, are directly connected to the Sedro-Woolley substation. At both the Sedro-Woolley substation and the Summit Park substation, many electrical feeders provide power throughout the Skagit Valley. The power is distributed to all industrial, commercial, and residential customers in the valley, as there are no public alternatives for power generation.

The Summit Park substation was completely rebuilt by PSE in 1998. Because of the five high-voltage lines supplying power to the station, Summit Park is considered a “solid” source of power. From this station, there are electrical supply feeders to Oak Harbor, the San Juan Islands, and Anacortes, including the local area around the Shell Refinery and the Tesoro Refinery.

It should be noted that the Shell Refinery also has four active co-generation plants. These plants are fairly large, consisting of one 20MW and three 40MW generators. The generators are not capable of being “islanded,” or independently run – that is, they need power from the main PSE grid to function and generate power. PSE also maintains an emergency peak (or stand-by) plant in Fredonia (by the County disposal site).

The PSE electrical distribution system is fairly well-maintained and is considered reliable. However, reliability is compromised when there is only one radial electrical feeder serving a group of homes or buildings. Where PSE has a “loop” system (two or more sources of power serving the customers as opposed to only one "radial" source) reliability is improved.

We expect the PSE utility power grid to remain the primary source of power in 2030. No additional improvements are recommended at this time.

Our recommendations for potential strategies and actions lie in the following areas:

Education

Provide community-wide education. This is vital to reducing energy consumption and increasing renewable energy and emergency back-up power. Business owners and residents alike should be educated as to the financial and environmental benefits. Private, contractor-driven solar campaigns (offering group-discount pricing for multiple installations) could play a role in the first five years and possibly beyond. Presentations and testimonials by early adopters will help to inspire others.

Emergency Power

Encourage government leaders and utilities to promote emergency power improvements to increase storm outage resiliency. Providing a minimum service level to supply vital basic needs will be important. Government and utilities should promote the use of small emergency power systems through incentives, educate about the benefits, and perhaps provide small power systems for use in emergencies. No significant improvement in technology is needed to implement these recommendations for 2030 as the systems described are all commercially available now. The key change needed is the widespread deployment of these systems to ensure self-sufficiency at all community levels.



A home energy audit is the first step in assessing how much energy your home consumes and how to make it more energy-efficient. *Credit: Jan Woodruff*

Renewable Energy

- Petition the state legislature to extend the production incentive program by making the case that the solar industry creates high-quality jobs and develops a skilled workforce, as well as helping the state to reach its greenhouse-gas emission targets. Continuing state and federal incentives will also help to encourage consumers by bringing down costs. (According to the U.S. Department of Energy’s 2012 SunShot Vision Study, the installed cost of solar PV systems may decrease 75% by 2020. This will “make the cost of solar energy competitive with the cost of other energy sources, paving the way for rapid, large-scale adoption of solar electricity across the United States.” As manufacturers increase scale and efficiency of production, overall component costs will continue to decrease. The global price per watt for solar modules has already dropped from \$60 (1976) to \$2 (2010). The average residential PV system cost about \$6/watt in 2010, and should reach \$1.50/watt³¹ by 2020, while commercial systems may drop from about \$5/watt to \$1.25/watt by 2020. We expect these trends to continue.) The decreasing cost of PV modules, inverters, and balance-of-system costs (everything from racking to permitting and design), will make solar energy more affordable for the average person.
- Amend the City of Anacortes building codes to require a certain amount of solar in all new construction, as long as the site is viable.

³¹ *SunShot Vision Study*. US Dept of Energy, Feb 2012

Energy Efficiency

- Eliminate wasted energy in buildings. This is the low-cost key to a sustainable and reliable energy future. (U.S. buildings currently consume 42% of delivered energy, 72% of electricity, and 34% of natural gas³².) Refer to the “One-Stop Energy Shop” program used successfully as part of Sustainable Connections³³ Community Energy Challenge. This program provides a systematic approach to identify and eliminate wasted energy.
- Require high-efficiency building standards for all new construction. The basis for these standards is the "Net Zero" construction concepts developed before the turn of the century. Over the course of a year, buildings achieve a zero-energy balance due to highly-efficient designs and as occupants modify their energy usage. In 2008, an average household used over \$2,000 in energy.³⁴ According to a Lawrence Berkeley National Lab study³⁵ approximately 27% of wasted household energy is due to phantom loads (electricity used when appliances are turned off).
- Promote energy audits. Audits will help homeowners plan which replacements or upgrades achieve the most energy reduction and dollar sense.
- Make energy-use information easy to understand and readily available. Simply being aware of how much energy we and our neighbors use may cause us to limit our energy use.

Conduct energy efficiency campaigns. Recent Cool Community Campaigns in Skagit County have helped residents learn how much energy (and money) can be saved by making easy, low-cost changes. During our first and most successful campaign on Fidalgo Island, the combined reductions in CO² were approximately 850,000 pounds annually, provided everyone followed through on commitments.

³² *Reinventing Fire*. Op.cit

³³ Sustainable Connections is a non-profit network of local, independently-owned Whatcom County businesses and supporters focused on sustainable economic development. See <http://sustainableconnections.org>

³⁴ Energy Savers Booklet. US Dept of Energy, Oct 2008

³⁵ Roth, K., et al., *Residential Miscellaneous Electric Loads: Energy Consumption Characterization and Savings Potential*, 2007, U.S. Department of Energy, Buildings Technology Program, Report No. Washington, D.C.

Vision 2030: Energy

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	Emergency Power -- Most business, government, and residential facilities have access to emergency power for outages lasting up to two weeks	Educate the public and government about the need for emergency power through presentations -- Encourage local vendors to promote generator systems	Continue public education programs -- Lobby for incentives for emergency power systems		City Departments Businesses Volunteers/Press/ Classes
2	Renewable Energy Deployment -- 11% of all residences and businesses have installed renewable energy systems	Contractor-driven campaigns offering group discounts for multiple installs -- Education presentations -- Lobby for extension of incentives	Continue	Continue	City Departments Home Owners Businesses
3	Renewable Energy -- Building code requires PV to be installed in all new construction	Education & Workshops -- Lobby City & County to change building codes			City and County government
4	Energy Efficiency -- 38% reduction of energy usage by 2030	Lobby City and County to pursue energy efficiency programs -- Educate public & businesses about benefits of energy efficiency			City & County government Homeowners Business owners
5	Energy Efficiency -- Establish/expand community energy program based upon Sustainable Connections model	Education -- Promote energy efficiency campaigns in City & County -- Look for grants to improve incentives for pursuing energy efficiency			City Property Owner Business Owners Grant agencies

VISION 2030: FEEDING OUR COMMUNITY

In 2030, the world is facing a global food crisis due to climate destabilization, soil and mineral depletion, rising energy prices, and competition for land and water. Crop failures are common as increasingly frequent “100-year” storms, floods and droughts³⁶ impact the country's bread-basket and other agricultural regions around the nation and world.³⁷ Bread, rice, soybean and corn prices have skyrocketed – as has the price of processed foods – bringing household budgets close to the breaking point. Conventional farming and shipping are expensive and unreliable due to the rising costs of the oil needed to grow, process and distribute food.



Conventional (aka “industrial”) farming is heavily dependent on fossil fuels to produce fertilizer, pesticides, and to run farm machinery. *Credit: Vince Streano*

A 2011 OXFAM report predicted that the average price of staple foods would double by 2031 and strongly urged an increase in food reserves.³⁸ That prediction came to pass five years early and sent shock waves through the global food system. Fortunately, however, food crises have had little impact on Fidalgo and Guemes Islands because soon after the report was published, residents resolved to build a more resilient food system.

Their first action was to form a Food Security Task Force to identify vulnerabilities and determine strategies to reduce oil dependency and increase resilience to rising climate and energy costs. A few of the questions the Task Force explored were:

- How will our region adapt to local climate change impacts, such as more rains that flood fields and delay spring planting, longer periods of summer drought, and new diseases and pest infestations?

³⁶ As an example, over 4000 high-temperature records were set during a 2012 drought that encompassed portions of five corn-producing states, including almost all of Ohio. Temperatures reached as high as 111°. http://thinkprogress.org/climate/2012/07/09/512829/biologist-on-the-midwestern-drought-its-like-farming-in-hell/utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+climate+progress%2FCrX+%28Climate+Progress%29

³⁷ “High temperatures can lower crop yields. The widely-used rule of thumb is that for each 1-degree-Celsius rise in temperature above the optimum during the growing season, farmers can expect a 10-percent decline in grain yields. A historical study of the effect of temperature on corn and soybean yields in the United States found that a 1-degree-Celsius rise in temperature reduced grain yields 17 percent.” *Full Planet, Empty Plates: The New Geopolitics of Food Scarcity*, by Lester R. Brown. See Chapter 1 at <http://www.earth-policy.org/books/fpep/fpepch1>

³⁸ <http://www.oxfam.org/en/grow/policy/exploring-food-price-scenarios-towards-2030-global-multi-region-model>

- What can we do to decouple oil and food from each other and be lower-carbon at all stages in the growing, processing, and delivering of foods?
- How much food does Skagit County import? What is already grown locally, and how can we fill the gaps?
- How do we educate and encourage more people to grow food? What can we do to support local farmers?
- How do we process, store, and use food optimally?

After a close examination of the likely challenges ahead, the Task Force determined that the key qualities of any system capable of feeding islanders in the future would need to include:

- An increased diversity of food sources
- Increased care and support of eco-systems (soil, water, pollinators, etc)
- Minimal use of fossil fuels to grow, process and deliver foods
- A sufficient number of knowledgeable and able-bodied people producing food
- Increased food production from backyard and community gardens
- Knowledge and infrastructure for processing and storing food

Local government and citizens worked diligently to carry out the recommendations, and their efforts paid off. In 2030, islanders understand where their food comes from and why it's necessary to eat differently. They no longer demand tomatoes in February or bananas from Panama, but relish eating local crops in season. Many grow food in backyard gardens, and those without access to land sign up for the popular Gardenshare program or choose plots available in several community gardens. Master gardeners mentor those who need advice, and free gardening classes are scheduled at the library and community gardens. A flourishing green-jobs program provides garden crews to help those who want to grow their own but lack the time, knowledge or physical ability.



Anacortes Community Garden.
Credit: Betty Carteret

Neighborhoods are dotted with roadside stands offering surplus fruits and vegetables, and gleaning parties regularly collect windfalls for local food banks. Very little organic matter is wasted. A facility on each island composts food and yard trimmings that are carefully screened for plastics and toxins, and each site produces BedSpread, a high-quality blend of animal manures and bedding.³⁹

³⁹ The future composting facilities also recycle urine: "The 100 gallons of urine each of us generate annually could be used to grow more than 300 pounds of wheat - enough to keep a person in bread for a year." *Sierra* magazine, Sept/Oct 2013, p.20. Also see the Rich Earth Institute (richearthinstitute.org).

To deal with increasingly hot, dry summers, islanders have learned the technique of dry gardening⁴⁰ and most homes have a rain-water catchment system. Many families are also diverting gray water (water from a tub, shower or sink) to use for irrigation.



Credit: Keith Lungren

In addition to getting food from small farms, backyard and community gardens, many islanders enjoy supplementing their meals with wild edibles such as nettles and mushrooms. Food is also available for the taking along the streets and in parks, where ornamental plants have been replaced with edible species. Apple and cherry trees fruit along Commercial Avenue, and raspberries and black currants line the Tommy Thompson Trail. Strawberries fill what used to be the hospital's lawn, beans and peas climb trellises by the Depot, and mint, rosemary, and fennel

surround Causland Park's gazebo. On Guemes, a community orchard next to Anderson's Store is conducting trials on a variety of nut trees.

Back in 2011, Gaia Rising Farm on Guemes led the way to growing staple food crops such as grains, beans and potatoes with minimal water and fossil-fuel inputs. Today, this pioneering farm has spawned several replicas supported by islanders who purchase shares and participate in regular work parties. Harvest festivals at threshing and cider-pressing time draw crowds eager to enjoy music, dancing, and an abundance of food.

To further increase food security, islanders set up a seed bank in 2015 that allows gardeners to obtain seeds from locally-grown plants that have adapted to survive new and challenging conditions such as extended heat spells. Seed-saving workshops are regularly scheduled, as well as Crop Swaps, where people gather to share vegetable starts, recipes, and produce grown from seed-bank seeds.

Because support for pollinators is critical to food security, farms and yards host numerous bee hives. Connected pathways of mostly native plants wind along parking strips and sidewalks, providing extra sustenance for bees and other pollinators. As a further aid, residents and city departments no longer use harmful pesticides and herbicides, but instead rely on integrated pest management practices.⁴¹

Finally, on any and every day of the week, islanders gather at the bustling Central Market, an Anacortes food and dry goods co-op built in 2023. The CM is a community hub that includes a small grain mill, a butchering facility, and a kitchen/classroom for cooking demos as well as workshops on canning, raising meat animals, foraging wild edibles, fermenting, seed-saving, food

⁴⁰ http://www.harvesttotable.com/2009/02/dry_gardening/

⁴¹ IPM is an environmentally sensitive approach to pest management
<http://www.epa.gov/pesticides/factsheets/ipm.htm>

storage, and more. In the attached CM cafe, locals enjoy the fruits of their labors and each other's company, feeling well-nourished by both.

Potential Strategies/Actions

In considering the necessity and feasibility of a more resilient local food system, it may be helpful to look at a couple of examples from the past. For instance, in the late 1980s, Cuban farmers relied heavily on cheap fuels and petrochemicals imported from the Soviet Union. In 1990, as the Soviet empire collapsed, Cuba lost those imports and faced an agricultural crisis.⁴²

What followed was Cuba's "Special Period," during which the country abandoned industrial food production, and replaced fuel-and-petrochemical-intensive farming with more localized, labor-intensive organic production. Out of necessity, farmers replaced tractors with oxen and Cubans adopted a mostly vegetarian diet. Scientists investigated biological methods of pest control and soil fertility enhancement. The government sponsored extensive education in organic food production, broke up large state-owned farms, offered land to farming families, and encouraged the formation of small agricultural co-ops. Urban gardens sprouted in parking lots and on public lands, and thousands of rooftop gardens appeared.

As a result, Cuba avoided what could have been a severe famine.

Closer to home is the second example: Victory Gardens. These were vegetable, fruit and herb gardens planted at homes and in parks during World Wars I and II to reduce the pressure on the public food supply. At the height of the movement, victory gardens produced roughly 40% of U.S. vegetables, an impressive achievement in so short a time.⁴³



Anacortes Farmers Market Credit: Vince Streato

What actions might Fidalgo and Guemes islanders take to increase food security?

Assess the local food system. The first step to building a more resilient food system is to evaluate our current strengths and vulnerabilities. How dependent are we upon fossil-fuel inputs? Could we feed ourselves if the grocery stores no longer had much on the shelves? Stakeholders such as government, schools, local growers, the Farmer's Market, grocery stores, restaurants, gleaners, 4-H, and the hospital should be invited to be part of the assessment process.⁴⁴

⁴²<http://neweconomy.net/publications/lectures/heinberg/richard/fifty-million-farmers>. (Also, see the film *The Power of Community: How Cuba Survived Peak Oil*, available in the TF&F library)

⁴³Ibid.

⁴⁴ The USDA Community Food Security Assessment Toolkit may be helpful in this effort: <http://www.ers.usda.gov/publications/efan-electronic-publications-from-the-food-assistance-nutritionresearch-program/efan02013.aspx#UmQSy1PUd6A>

Localize and increase sustainable food production. Invite stakeholders to join a voluntary relocalization initiative that would encourage such efforts as more backyard gardens, edible landscapes, community orchards and/or food forests.⁴⁵ Amend city codes to allow for latitude in the keeping of livestock such as chickens, rabbits and goats. Encourage decision-makers to support small farms through favorable zoning and by purchasing local food for schools and hospitals. Land reform may be required to make more land available for farming; conservation land trusts may be helpful in this respect.⁴⁶

Educate and involve the public. Citizens should be educated about food resilience issues, and gardening techniques such as permaculture,⁴⁷ composting, seed-saving, biointensive gardening,⁴⁸ small animal husbandry, and ways to support and access food from local producers. Build upon Transition Fidalgo's Eat Your Yard gardening series and Skillshare Workshops, as well as the Master Gardener's Know & Grow classes. Expand efforts to develop food awareness and a sustainable food culture in the local schools.

Create a seed bank. The value of saving locally-adapted seed to increase food security cannot be overstated. Growing open-pollinated organic seed prevents the loss of genetic diversity and the loss of local seed varieties. It also generates seed adapted to thrive in the soils and climate of our region. We can look to our neighbors to the east (Chuckanut Transition⁴⁹) and the west (Lopez Community Land Trust⁵⁰) for examples of seed bank start-ups and for guidance in building our own. Other good resources are the Seed Savers Exchange⁵¹ and the Richmond Grows Seed Lending Library.⁵²

⁴⁵ As an example, the seven-acre Beacon Hill Food Forest in Seattle will include fruit and nut trees, berry bushes, edible perennials, a community garden, and gathering plaza. Phase One (two acres) is scheduled to be up and running by early 2014. <http://www.beaconfoodforest.org>

⁴⁶ As an example, see Indian Line Farm at <http://www.indianlinefarm.com/history.html>

⁴⁷ Permaculture was developed in the late 1970s by Australian ecologists Bill Mollison and David Holmgren. Holmgren defines it as “consciously designed landscapes that mimic the patterns and relationships found in nature, while yielding an abundance of food, fiber, and energy for provision of local needs.” <http://holmgren.com.au/about-permaculture/>

⁴⁸ Biointensive farming was developed primarily by John Jeavons, who defines it as “. . . an organic agricultural system that focuses on maximum yields from the minimum area of land, while simultaneously improving the soil. The goal of the method is long-term sustainability on a closed-system basis. Because biointensive is practiced on a relatively small scale, it is well suited to anything from personal or family to community gardens, market gardens, or minifarms. It has also been used successfully on small scale commercial farms.” Richard Heinberg, *Peak Everything*, pp. 59-60

⁴⁹ <http://www.chuckanuttransition.com/> CT suggests viewing "The Growing Home Seed Bank" at <http://www.youtube.com/watch?v=gaNUZnuyZOo>

⁵⁰ <http://www.lopezclt.org/seed-security-initiative-and-seed-library>

⁵¹ Seed Savers Exchange is a non-profit organization dedicated to saving and sharing heirloom seeds. <http://www.seedsavers.org/>

⁵² Set up a seed bank in the public library! Learn how at <http://www.richmondgrowsseeds.org/>

Support pollinators. Food security depends on pollinators – no pollinators, no food. Currently, pollinators such as bees are declining due to shrinking habitats, pollution and pesticides, and they may become further stressed by climate impacts. An example of a nearby pollinator support system is the "Pollinator Pathway," a mile-long series of gardens in planting strips being developed along Seattle's Columbia Street. This public project is being created in collaboration with scientists, designers, and planners to help honeybees and other pollinators such as bumble bees.⁵³ Mason bees are also excellent pollinators and islanders should be encouraged to host them in home gardens.⁵⁴



According to the Pollinator Partnership, pollination by insects produces \$40 billion worth of U.S. products annually. *Credit: Keith Lungren*

⁵³ <http://www.pollinatorpathway.com/about/what-is-it>

⁵⁴ <http://crownbees.com/>

Vision 2030: Food

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	Local and regional food security analysis	Form a task force to identify vulnerabilities and formulate strategies to increase food resilience			City, County, Farmers, Farmers Mkts, WSU Extension, Ag Groups, Ana. Community Gardens Committee, Gleaners, Groceries, Schools, Hospital...
2	Increased local food production	--Educate community via workshops and garden/farm tours on growing techniques; soil mgmt; permaculture; water conservation; food storage; composting; livestock care, etc. --Set up a garden-share program --Start planning process to replace ornamental city trees and shrubs with edible landscaping --Research feasibility of community orchards/food forests on Fidalgo & Guemes --Support the local production of staple foods	--Continue education efforts --Amend codes to allow goats in city backyards -- Implement and complete edible landscaping throughout the city --15% increase in backyard food production --All schools have on-site food gardens --Community orchard or food forest taking shape	Local food production supplies a healthy percentage of community needs (goal determined in food security analysis)	Master Gardeners, <i>Eat Your Yard</i> , Anacortes Community Gardens, City, Schools, Home Owner Associations, WSU Extension, Gaia Rising Farm, Landscapers, Beacon Hill Food Forest Project
3	Increased access to locally-grown food	--Promote food ex-changes and gathering options such as crop swaps, gleaning, and foraging	- Regular gleaning and harvesting parties; seasonal walks promote and educate about	Local food co-op and/or community kitchen	Farmers, Home Gardeners, Anacortes Community Gardens, Time Bank, Parks

		<ul style="list-style-type: none"> --Consult/contract with farmers --Focus on providing food to vulnerable populations --Add food swap division in Time Bank and/or food barter system --Create a foraging map --Educate on foraging and avoiding plant depletion --Explore options for a covered, year-round farmers market --Explore options for a community kitchen/food processing facility --Explore options for a local food co-op 	<ul style="list-style-type: none"> foraging --Food banks well-supplied with locally-grown food --Food exchanges occurring through Time Bank and barter system --We have a covered, year-round farmers market --Planning in process for community kitchen and/or local food co-op 		<ul style="list-style-type: none"> Dept., Food Banks, Farmers Market, Skagit Valley Food Co-op
4	Thriving populations of native bees and other pollinators	<ul style="list-style-type: none"> --Education and workshops --Create "pollinator pathways" --Establish bee hives (mason and honey) where feasible --Work to remove harmful pesticides/herbicides from local stores; replace with organic/no-harm alternatives 	Continue education and pollinator-friendly plantings	Pollinators are rebounding. Harmful pesticides/herbicides are no longer sold or used.	Beekeepers, Fidalgo Backyard Wildlife Habitat Project, Skagit Conservation District, WSU Extension, Anacortes Community Gardens, Homeowners, City
5	Seed bank	<ul style="list-style-type: none"> --Research neighboring seed banks; contact Seed Savers Exchange --Build support in community 	Seed bank in place		Local Farmers and Gardeners, Lopez Community Land Trust, Chuckanut Transition

VISION 2030: PHYSICAL AND EMOTIONAL HEALTH

In 2030, visitors to Fidalgo and Guemes Islands often comment on the general sense of well-being among residents. They note the numbers of people out walking, biking, and otherwise enjoying a slower-paced lifestyle. Fruits and vegetables seem to grow in every available nook, many with “Take What You Need” signs nearby. Music festivals, street theater, and colorful, child-painted murals suggest a joy not easily found in most communities these days.

2030 is a challenging time, even for those who’ve done all they can to prepare for the impacts of climate change. Temperatures in the Puget Sound region have warmed at a rate greater than the global trend,⁵⁵ driving an increase in wildfires, storms, droughts, and flooding.

This new climate reality affects not only the environment but human health.⁵⁶ Smoke plumes from wildfires drift across the Northwest,⁵⁷ exacerbating respiratory disorders. Local papers headline the appearance of new viruses due to warming conditions.⁵⁸ Prolonged higher temperatures cause more cases of heat exhaustion and heat stroke,⁵⁹ and increased concentrations of ground-level ozone, or smog. Ozone pollution, as well as a longer pollen-producing season, is sending more people with asthma

“Climate change is one of the most serious health threats facing our nation. Yet few Americans are aware of the very real consequences of climate change on the health of our communities, our families and our children.”

*Dr. Georges Benjamin,
Executive Director of the
American Public Health Association*

⁵⁵ *Uncertain Future: Climate Change and Its Effects on Puget Sound*. The Climate Impacts Group, University of Washington, p 13. <http://cses.washington.edu/db/pdf/snoveretalpsat461.pdf>

⁵⁶ In April 2014, the latest National Climate Assessment Report from the Intergovernmental Panel on Climate Change will for the first time contain an entire chapter dedicated to public health and climate change.

⁵⁷ One study estimated that the regional area burned per year will roughly double (i.e about 900 sq. mi.) by the 2040s. *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. Edited by Amy K. Snover, Philip W. Mote, Meghan M. Dalton, p. 122 <http://cses.washington.edu/db/pdf/daltonetal678.pdf>

⁵⁸ Climate-related ecosystem changes can increase the range, seasonality, and infectivity of some vector-borne diseases. (A “vector-borne disease” is an illness caused by an infectious microbe transmitted to people by biting insects such as mosquitoes or fleas.)

⁵⁹ Centers for Disease Control and Prevention. <http://www.cdc.gov/climateandhealth/effects/default.htm>
Also: “In 1995, a heat wave hit Chicago resulting in more than 700 deaths; more than 45,000 people died in heat waves during the summer of 2003 in Western Europe; and the summer of 2006 brought scorching heat to much of the United States and Canada, killing 300 in California alone and sending tens of thousands to emergency rooms and hospitals.” *Human Health and Well-Being in an Era of Energy Scarcity and Climate Change*. Cindy L. Parker, MD, MPH, and Brian S. Schwartz, MD, MS, p.7

and other breathing disorders to the hospital.⁶⁰

To safeguard community health on Fidalgo and Guemes, citizens and healthcare providers in the 20-teens formed a “Climate Change and Health Task Force” that partnered with organizations such as the Centers for Disease Control and Prevention⁶¹ and *Healthcare without Harm*.⁶² The Task Force focuses heavily on outreach and regularly reminds people that efforts to address climate change create important co-benefits such as increased physical activity, decreased obesity, fewer motor vehicle-related injuries and deaths, and less pollution-induced illness.

The Task Force consulted with local schools to broaden their health sciences curriculum, which now includes information about climate-related health impacts, and a thorough grounding in human biology and nutrition. As a result, children are better informed regarding lifestyle choices that will keep them healthy and prepared for an uncertain future.



Credit: Vince Streano.

More frequent storms and droughts have affected crop production, causing shortages and rising food costs across the country. As food insecurity stresses households, many are choosing diets based on cost instead of healthfulness. But on Fidalgo and Guemes, an abundance of nutritious food from residential gardens, community orchards, school gardens, and a year-round Farmers’ Market goes a long way toward keeping residents well-nourished in 2030.

As public awareness of wellness issues grows, the local Time Bank is used by many to access health specialists. Others attend the hospital’s “Healthy Lifestyle” classes, while “Walk with a Doc”⁶³ outings are enjoyed by those seeking fitness and the chance to visit informally with a doctor.

Healthcare workers prescribe not only conventional but complementary treatments and stress the prevention of disease through information, low-cost therapies, nutrition, and lifestyle choices. An increasing number of medicines in 2030 are locally sourced, with farmers growing key medicinal

⁶⁰ “Respiratory allergies and diseases may become more prevalent because of increased human exposure to pollen (due to altered growing seasons), molds (from extreme or more frequent precipitation), air pollution and aerosolized marine toxins (due to increased temperature, coastal runoff, and humidity) and dust (from droughts).” *A Human Health Perspective on Climate Change*. Environmental Health Perspectives and the National Institute of Environmental Health Sciences, p.vi

⁶¹ The CDC provides funding for health departments to conduct analyses and programs aimed at reducing the health consequences of climate change and developing adaptation strategies using the CDC’s BRACE (Building Resilience Against Climate Effects) framework. <http://www.cdc.gov/climateandhealth/BRACE.htm>

⁶² *Health Care Without Harm* has partners around the world working to implement alternatives to healthcare practices that pollute the environment and contribute to disease. <http://www.noharm.org/>

⁶³ “Walk with a Doc” is a national program that features 30-45 minute walks with volunteer doctors who chat with participants about health and fitness. www.walkwithadoc.org Locally, the program has recently started up and is coordinated by naturopath Alethea Fleming.

plants for processing in local laboratories. Many families grow medicinal herbs in a corner of the home garden or scattered through an edible landscape, and are able to treat minor health conditions such as headaches and upset stomachs with herbal concoctions.

The most vulnerable members of the community – children, the elderly, the chronically ill, and the poor – receive support from churches, food banks, social programs, and neighborhood groups who monitor the needs of those at risk. CERT⁶⁴ teams on each island are prepared for disasters and extreme weather events, and work with the Red Cross, City, and schools to provide shelters in cases of emergency. Fidalgo and Guemes have also implemented a “Healthy Homes Program” for elderly, low-income residents that provides roof coatings and insulation to keep homes cool in summer and warm in winter. As an added benefit, the program helps bring down the energy costs that are shrinking household budgets.

Households aren’t the only ones feeling the energy bite in 2030. Energy-intensive hospitals⁶⁵ are experiencing increased operating, transport, and supply costs due to rising oil prices. There are scattered reports of shortages for petrochemical-based medical supplies such as certain medicines, intravenous tubing, salves, syringes, wound care and surgical supplies.⁶⁶



Credit: E. Adams

Fidalgo’s Island Hospital went through an extensive energy audit in 2015 and consequently adopted conservation and retrofit recommendations that have greatly reduced its energy use and greenhouse gas emissions. With conservation measures in place and a large solar array installed, the hospital in 2030 is able to meet a substantial portion of its energy needs. Additionally, by joining the “Healthier Hospitals Initiative,”⁶⁷ Island Hospital has found numerous ways to lessen its carbon and waste footprints, and has invested the dollars saved back into patient care.

⁶⁴ Community Emergency Response Team. www.Fema.gov/community-response-teams

⁶⁵ According to the U.S. Department of Energy, hospitals are some of the most “complex and energy-intensive facilities” in the country. Major heating and lighting needs, 24/7 occupancy, and large machines lead hospitals to have more than 2.5 times the energy intensity and carbon dioxide emissions of commercial office buildings. “Department of Energy Announces the Launch of the Hospital Energy Alliance to Increase Energy Efficiency in the Healthcare Sector.” <http://energy.gov/articles/department-energy-announces-launch-hospital-energy-alliance-increase-energy-efficiency>

⁶⁶ “Medicine After Oil” by Daniel Bednarz. *Orion Magazine*, August 2007. <http://www.orionmagazine.org/index.php/articles/article/314/>

⁶⁷ The “Healthier Hospitals Initiative” is a national movement dedicated to helping the healthcare sector address its environmental impacts and shift to a more sustainable business model. HHI reports that hospitals use more than 8% of the nation’s energy and are a significant source of greenhouse gas emissions. Healthcare systems also produce 11.7 thousand tons of waste each day. <http://healthierhospitals.org/hhi-challenges>

The hospital and community wisely recognize that along with physical wellness, mental resilience is vital to thriving in 2030.⁶⁸ Support groups and mental health teams help people to deal with lifestyle adjustments, handle stress, and share anxieties about a rapidly changing world.

Such feelings are widespread in 2030, but visitors to Fidalgo and Guemes often remark that islanders seem to have found the key to contentment. If they linger a while, they discover the reason lies in being part of a deeply connected community with a growing sense of purpose. Connection and purpose build hope in challenging times, and hope, say islanders, is the first prescription for health.

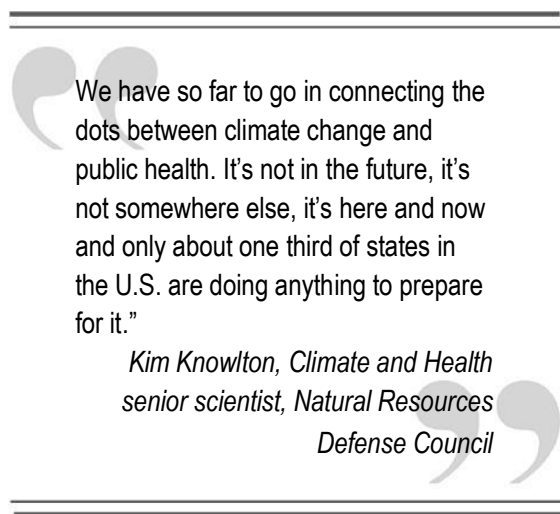
Potential Strategies/Actions

Health is much more than the absence of illness.⁶⁹ It also includes feeling safe, the fulfillment of basic needs (clean air and water, food, shelter), positive social interactions, meaningful work, and confidence about the future. Many of these things are likely to be compromised by climate disruption, energy scarcity, and/or economic hardship.

To help the members of our community move into a challenging future with both physical and emotional resilience intact, we suggest the following strategies:

Educate healthcare professionals and decision makers.

Formulate a questionnaire to assess healthcare providers' knowledge concerning the impacts of climate change on human health.⁷⁰ Create an



We have so far to go in connecting the dots between climate change and public health. It's not in the future, it's not somewhere else, it's here and now and only about one third of states in the U.S. are doing anything to prepare for it.”

Kim Knowlton, Climate and Health senior scientist, Natural Resources Defense Council

⁶⁸ “The risks to mental well-being in a future of energy scarcity and climate change are quite significant. Examples include persons forced from their homes due to extreme weather events; the inability of the environment to provide sufficient food and water; individuals faced with job loss, separation from family and friends, and concern about the future; and persons coping with the various disruptions to life caused by an unstable climate. Such mental health outcomes as depression, anxiety, and post-traumatic stress disorder are expected to increase as a result.” *Human Health and Well-Being in an Era of Energy Scarcity and Climate Change*. Op.cit., p.13.

⁶⁹ “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” World Health Organization, 1948

⁷⁰ “A representative national survey of local public health officers conducted in 2008 found that the majority of local public health officials in the United States are aware of the growing human health risks associated with climate change. Many of these health officers reported that they are already seeing the human health impacts of climate change in their jurisdiction, and that they expect these impacts will get worse over the next 20 years. The most commonly reported climate change health impacts were heat related illnesses (56%), storm and flood related health impacts (47%), drought and fire related health impacts (47%), and vector-borne infectious diseases (42%). Over half of the health officials (56 to 73%) indicated that they anticipate these health problems will become more common over the next 20 years in their jurisdiction as a result of climate change.” *Conveying the Human Implications of Climate Change; A Climate Change Primer for Public Health Officials*. George Mason University Center for Climate Change Communication, p.11

education template and conduct “teach-ins.” To keep current on the challenges, tie into the CDC’s system to track data on environmental conditions and disease risks related to climate disruption.⁷¹ Encourage healthcare providers to speak out on local climate change policy and to educate decision makers on both the threats and the health benefits that can be derived from climate change mitigation and adaptation (e.g., more exercise from “active transportation,” reduced air pollution, increased food safety and nutrition from locally-sourced food, reduced motor vehicle-related injuries and deaths, etc.).

Educate the public. Provide regular information on the connection between health and climate change through a speaking series, e-newsletters, school programs, webinars, and print media.⁷² Facilitate incentivized workplace wellness programs; create “green” health project awards and recognitions, etc. Educate people that keeping the immune system resilient by paying attention to nutrition, exercise, and sleep is critical to preventing illness. Help people realize that if they’re healthy, they’ll not only function better in the event of a disaster but will be better equipped to deal with the chronic stressors brought on by a destabilizing world.⁷³



Credit: E. Adams

Conserve energy in the healthcare system. As the availability of cheap, easy-to-extract fossil fuels declines, the costs of transporting goods and people, powering facilities and machines, and manufacturing synthetic products will rise. The healthcare industry should strive for greater energy efficiency in its facilities and technologies.

Consider mobile drop-in clinics. There are currently two drop-in clinics on Fidalgo. Because rising fuel costs and emissions will likely make transportation an issue, consider stationing a mobile health clinic on Guemes, and on south Fidalgo. Another option is to provide online or phone consultations with health professionals to take care of the initial “do I have a problem” question, which may prevent unnecessary trips to healthcare facilities.

⁷¹ The CDC’s *Climate-Ready States and Cities* project helps states and cities partner with local and national climate scientists to understand the potential climate changes in their areas. The CDC will assist states and cities in developing and using models to predict and monitor health impacts, and to identify those most vulnerable to these impacts. http://www.cdc.gov/climateandhealth/climate_ready.htm

⁷² “The public is largely unaware that climate change threatens human health, much less their own health and the health of other members of their community. Relatively few Americans, without prompting, report that climate change has any connection to human health, although with prompting they are easily able to imagine such a relationship. Most members of the public, therefore, almost certainly fail to consider the health implications of climate change when they make decisions as consumers (e.g., how to commute), and as citizens (e.g., what to ask of their elected leaders).” *Conveying the Human Implications of Climate Change*. Op.cit., p.11

⁷³ Indirect climate impacts can include “persistent chronic stressors due to changes or the threat of changes to the physical, economic and social environments among those affected.” *Climate Change in the Northwest: Implications for Our Landscapes, Waters and Communities*. Edited by Meghan M. Dalton, et al, p.193

Develop a response plan for health threats such as heat waves, severe weather events, and infectious diseases. Heat-related illness and deaths are likely to increase in response to climate change⁷⁴ but aggressive public health interventions such as health-alert warning systems can minimize impacts. As an example, Philadelphia has implemented a system which issues alerts during heat waves. News organizations then publicize tips on how people can protect themselves. The health department and “block captains” use a buddy system to check on vulnerable residents; electric utilities voluntarily refrain from shutting off services for non-payment; and public cooling places extend their hours. Philadelphia also operates a “Hotline” where nurses stand by to assist callers experiencing health problems. Mobile units are dispatched to the residence if people are deemed at risk.⁷⁵

Provide mental health support for people in stress. People are likely to find themselves overwhelmed at times by changing personal and societal conditions, and may struggle to cope with a world upended by climate change.⁷⁶ To help address feelings of fear, guilt, anger, and hopelessness, train healthcare counselors in strategies to build personal resilience (the ability to recover from difficult experiences). Encourage the formation of community groups where people feel safe in sharing thoughts and emotions, and can find comfort in knowing they are not alone.

⁷⁴ “Computer models suggest that if climate change occurs unabated (‘climate chaos’), by 2040 heat waves as severe as the 2003 event that killed so many people in Europe could occur every other year. *Human Health and Well-Being in an Era of Energy Scarcity and Climate Change*. Op.cit., p.8

⁷⁵ *Conveying the Human Implications of Climate Change*. Op.cit., p. 23 Closer to home, Oregon health officials are also preparing for more heat-related illnesses.

<http://earthfix.opb.org/communities/article/oregon-counties-plan-for-the-health-impacts-of-cli/>

⁷⁶ A report released in 2012 estimated that about 200 million Americans will be exposed to serious psychological distress from climate-related events in the coming years, and that the nation’s counselors, trauma specialists and first responders currently are ill-equipped to cope. *The Psychological Effects of Global Warming on the United States*. National Wildlife Federation’s Climate Education Program and the Robert Wood Johnson Foundation.

http://www.climateaccess.org/sites/default/files/NWF_Psychological%20Effects.pdf

Vision 2030: Health

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	Climate Change and Health Task Force	--Organize group of interested healthcare professionals, local Govt officials, and citizens --Explore programs offered by the CDC and <i>Healthcare Without Harm</i> and consider forming partnerships --Monitor climate-related health impacts and formulate/implement prevention and response measures (e.g. air quality monitoring, virus monitoring, mold prevention education, asthma trigger mitigation, etc.)	Task Force continues to monitor impacts, promote outreach, and formulate response measures	Continue	Skagit County Health Dept., Island Hospital, Healthcare providers, First responders, City, Citizens
2	Widespread professional and public awareness of climate/health connection	--Identify healthcare professionals' knowledge and formulate a teaching template --Educate general public via media, webinars, school programs, speaker series, etc Include not only the dangers of climate disruption but stress health benefits of reducing carbon emissions --Promote "green" health project awards focused on decreasing carbon footprint & increasing healthy living --Work with school district to expand health curriculum	--Continue professional and public education efforts --School district has implemented climate health impacts, human biology, and nutrition into curriculum	--Majority of citizenry understands health dangers of climate change and health benefits of addressing it --All health professionals schooled in the above	Citizens, Healthcare professionals, Schools, Service clubs, Local media
3	Energy conservation practices and policies in all	--Work with healthcare facilities to implement energy efficiency practices and policies --Evaluate benefits of hospital	--Healthcare facilities implement measures as indicated from energy audits	Healthcare facilities achieve an impressive reduction in both carbon emissions and operating	Hospital, Clinics, Nursing homes, Assisted living facilities, PSE, Local solar companies

	healthcare facilities	joining the Healthier Hospitals Initiative --Energy audits for all hospital buildings --Evaluate feasibility of solar PV systems for healthcare buildings	--Solar systems installed where feasible	costs.	
4	Health Alert warning system	--Organize a team of healthcare professionals and citizens to research potential for dangerous climate-related health problems --Train citizens in CERT (Community Emergency Response Training)	--Health alert system in place --CERT program well established --Neighborhood teams aware of vulnerable residents in vicinity --Consider creating mobile clinics for outlying areas	--Continue to evaluate and fine-tune alert system --Majority of neighborhoods have CERT teams --Mobile units operate as clinics on Guemes and south Fidalgo	Local newspapers, radio and TV stations, Hospital, Paramedics, Clinics, County Health Dept, Red Cross, Churches, Care facilities, City, Schools
5	Strong mental health support system	--Interface with mental health professionals and community health groups, churches, etc. regarding ways to address mental health concerns related to chronic stress, fear, feelings of loss, etc. --Provide training for professionals and groups re/building personal resilience in a destabilizing world	--Mental health network consisting of professional counselors and local support groups in place --Majority of local healthcare providers schooled in mental health stressors --General public aware of mental health issues and coping techniques	People can easily find trained individuals or groups ready to listen and provide support	Hospital, Healthcare professionals, Mental Health associations, Churches, Schools

VISION 2030: AFFORDABLE HOMES & VIBRANT NEIGHBORHOODS

Until the early 2000s, Fidalgo and Guemes Islands offered a great quality of life for their mostly middle-class residents, who enjoyed the mild climate, natural beauty, outdoor recreation opportunities, low crime rate, and decent standard of living. By 2010, however, inadequate land-use planning and insufficient planning for social and economic trends created a perfect storm of circumstances that began to erode quality of life.



Credit: Jan Woodruff

A rising cost of living was among the top issues facing the community in the early 2000s. In 2006, housing costs⁷⁷ for a median-priced home in Anacortes consumed 63% of the median household income--a cost-to-income ratio twice the federal standard.⁷⁸ The situation for low-income renters was more troubling: the median rent consumed 61% of the gross income of a minimum-wage worker in 2011,⁷⁹ leaving just \$618 a month for taxes, groceries, transportation, utilities, clothing, household supplies, personal care, health care, and other expenses.

The problems associated with high housing costs permeated the community. Specifically:

- Young residents and working families moved away, and Anacortes school enrollment declined.⁸⁰
- Employers had difficulty recruiting and retaining workers (e.g., high housing costs made it difficult for Island Hospital to recruit young doctors).⁸¹
- Most jobs (60%)⁸² were filled by workers who commuted by car from outlying areas, producing more air pollution and higher greenhouse-gas emissions, as well as stressing health and personal relationships.⁸³

⁷⁷ "Housing costs" includes: principal and interest payments, PMI insurance, taxes and insurance on a 90% loan. *Anacortes Futures Project*, 2009. Page 29.

www.anacortes.org/pdf/AnacortesFuturesReport.pdf

⁷⁸ Federal agencies define *affordability* as housing expenditures that do not exceed 30% of gross income.

⁷⁹ Median rental cost: \$975. <http://www.city-data.com/city/Anacortes-Washington.html>

⁸⁰ *Anacortes Futures Project*, 2009. Page 29. www.anacortes.org/pdf/AnacortesFuturesReport.pdf

⁸¹ *Anacortes Futures Project*, 2009. Page 30. www.anacortes.org/pdf/AnacortesFuturesReport.pdf

⁸² "Community Profile: Anacortes Washington." Anacortes Chamber of Commerce.

<http://www.anacortes.org/uploads/Community%20Profile.pdf>

⁸³ "Your Long Commute May Be Hurting Your Marriage." Eric Jaffe, *The Atlantic Cities*, August 9, 2013

After a century of low-density development (i.e., urban sprawl), homes were segregated from commercial and industrial areas, and people had to travel farther for work, shopping and leisure. Absent decent public transit and pedestrian and biking amenities, islanders were locked into car dependence. Rising gas prices, which quadrupled between 2000 and 2030, gnawed away at household budgets. Home-energy prices (i.e., for electricity, heating fuel, etc.) soared as well. As the cost of living climbed, so did property crimes. In 2013, residents voted to raise the sales-tax rate to build a new county jail.



Credit: Joe Shlabotnik

Escalating housing, transportation, and home-energy costs ate away at household discretionary income, and sales-tax revenue—30% of Anacortes’ general fund—declined. Simultaneously, City expenses for energy, transportation, and climate change mitigation escalated. In 2012, the City began deferring road and infrastructure maintenance, as well as investments in public amenities. Budget deficits, service cutbacks, and the erosion of quality of life continued for a decade.

In 2030, despite immense challenges, islanders enjoy a renowned quality of life. A “complete-streets” transportation system makes it easy to walk, bike, or take efficient public transit to common destinations. Electric shuttles run frequently between downtown, neighborhoods, and common destinations on the island. Walking and biking are popular ways of getting around, and residents are healthier, wealthier, and less stressed.

Vibrant mixed-use neighborhoods offer shops, offices, parks, and other amenities within walking distance of most homes. Most neighborhoods have a transit stop, community garden, gathering place, and green space, making them lively places to live, work, learn and play. Most homes have rain gardens, which prevent toxic runoff from entering storm systems and the Puget Sound. Eleven percent of residences—1200 homes—have a rooftop or yard-mounted solar photovoltaic (PV) array.

The City has improved housing affordability and efficiency by: (1) offering green-building and solar incentives, (2) promoting weatherization, (3) encouraging higher-density, mixed-use and infill development, and (4) aggressively promoting the Accessory Dwelling Unit ordinance, which enables homeowners to supplement their income by adding a small rental on a lot with a single-family home. Today, Anacortes has ample affordable housing and a diverse population. Residents’ homes more durable, resource efficient, comfortable, and have healthier indoor air quality.

A new LEED Platinum, mixed-use waterfront development boasts a small convention center, eco-hotel, town square, and condominiums, as well as office and retail space. This “jewel in the crown” provides infill housing, an “outdoor living room” where islanders gather, and a desirable venue for performing arts, cultural, educational and community events. Visitors flock to this “vibrant, sustainable waterfront community.” The high quality of life attracts “coastal retirees” and the talent needed to create a robust economy (i.e., young people, working families, entrepreneurs and knowledge workers).

The *sharing economy*,⁸⁴ which captured the world’s attention in the late 1990s as an antidote to shrinking prosperity, destructive consumerism, and declining social cohesion, flourished on the islands. Today, residents commonly share fellowship, skills and idle assets (e.g., tools, expertise, gardening space, cars, vacation homes, etc.) to help themselves and their neighbors thrive in turbulent times.



Bellingham Farmers Market. *Credit: Chris and Jenni*

From a seasonal farmers’ market and a few community gardens in the 20-teens, the local sharing economy has expanded to include: a year-round (i.e., indoor-outdoor) Anacortes Farmers’ Market; the Salish Community Bank; Central Market (a food and dry goods co-op that includes a community kitchen, freezer, root cellar and butchering service for locally-grown meat animals); Fidalgo Elder-Care (nonprofit providing state-of-the-art care), Phoenix (a repair and recycling co-op), Fidalgo Solar, K-Street Tool-Share, Verde (green-construction co-op), D-Street and Guemes Community Orchards, and Cap Sante Car-Share (small fleet of high-efficiency vehicles). The Fidalgo & Friends TimeBank service exchange makes it easy for residents to fill their needs without spending money. Weekly gardening, food-preservation, weatherization, green-building, and “fix-it” workshops help mitigate the unavoidable impacts of global climate change, energy descent and economic decline.

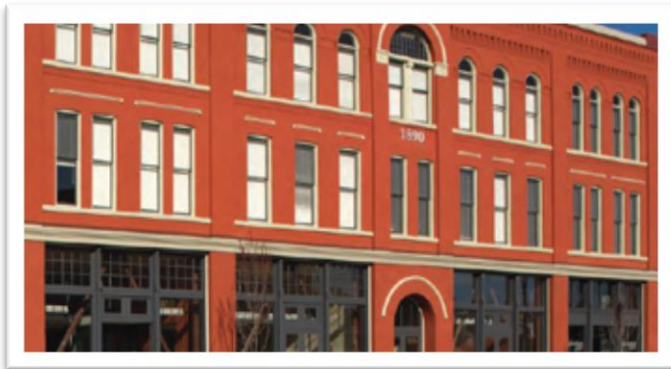
Today, islanders’ sense of community, social networks and cooperative spirit are strong. Thanks to public information campaigns and the efforts of “community resilience champions,” a majority of citizens are

- knowledgeable about the risks of climate and economic disruption,

⁸⁴The *sharing economy* is comprised of peer-to-peer and nonprofit social ventures and micro-enterprises that share, trade or sell underutilized assets (e.g., tools, equipment, skills, time, food, rooms, cars, etc.). Participation in the sharing economy, which is as old as civilization, swelled when internet platforms lowered transaction costs and made it easy for individuals to trade goods and services.

- keenly interested in safeguarding the health of their homes, the environment, and local businesses, and
- actively involved in government decision-making.

Potential Strategies/Actions



The recently renovated Wilson Hotel in downtown Anacortes provides low-income housing above commercial space. *Credit: William Wright Photography*

Increase Affordable Housing. Affordable housing is a critical component of any community’s ideal housing mix. It provides for social and economic diversity and a strong labor force (i.e., better recruitment and retention). It ensures that: seniors can remain in their homes as they age; young people can afford their first home; and families at any life stage can have a decent, healthy rental home. An adequate supply of affordable housing enables people to live in the communities where they shop, work, worship and play, resulting in shorter

commutes, better air quality, less respiratory illness and cancer, lower greenhouse-gas emissions, and the hope of decelerating global warming.

Infill housing (i.e., new homes built on repurposed land) is a fundamental tool in urban redevelopment. Infill development saves money, because the infrastructure already exists. Benefits of infill development include: stronger social cohesion; attractive streetscapes; decreased crime; reduced car dependency; and improved public health due to less air pollution, and more walking and biking.

Anacortes’ *Accessory Dwelling Unit (ADU)* ordinance⁸⁵ should be aggressively promoted. This type of affordable infill housing makes sustainable use of existing infrastructure, increases densities to levels at which public transit becomes viable, diversifies neighborhoods, and is less expensive than multi-family housing. More homeowners would likely add a small ADU to increase their income, property value and wealth, if they were aware of the opportunity.



ADUs can provide stand-alone or over-garage rental units on single-family lots. *Credit: Sphilbrick*

⁸⁵ Anacortes’ Accessory Dwelling Unit ordinance permits property owners to construct a living space of up to 900 square feet on a property where a single-family residence already exists.

Encourage Sustainable Building. Residential energy use (from fossil-fuel combustion) accounts for 21% of CO₂ emissions.⁸⁶ Thus, increasing the efficiency of homes can dramatically reduce greenhouse gas emissions. Green (aka *sustainable*) homes are resource efficient, have healthy indoor air quality, and provide comfortable living and working environments.⁸⁷ People who make their homes greener help offset global warming and are better positioned to withstand rising energy costs.

Anacortes can increase its stock of sustainable housing. Resolution 1752⁸⁸ commits the City of Anacortes to (1) promoting LEED and green-building practices in the private sector and (2) meeting the LEED Silver (or higher) rating for construction of all new and renovated City buildings.

The City can follow examples from other cities, such as Bellingham, which offers green builders free technical assistance, expedited building-permit reviews, as well as financial incentives for water conservation. Bellingham encourages sustainable development by offering low-impact-development (LID) incentives and resources, including flexibility in code standards allowing for LID design strategies and a 50% reduction in storm-water development charges for qualifying projects. Finally, the City could offer incentives for construction of *green* ADUs (e.g., priority building permits for projects that meet green-building standards as well as conditional-use permits for “deep green” projects).

We encourage the City to persuade MJB Properties (perhaps with incentives funded by a development grant) to build the LEED Platinum, mixed-use facility described on page two. It would fulfill islanders’ long-held desire for a performing-arts event venue. It would provide all the community benefits of infill housing described in the previous section. With exciting “goings on,” the City could attract the younger residents, entrepreneurs and knowledge workers needed to diversify and strengthen our weak economy. A green conference facility and hotel would attract affluent visitors and position Anacortes as a leader in sustainable tourism. This development could be the tipping point that finally enables Anacortes to be the “vibrant, sustainable waterfront community” we have long envisioned.



Portland’s Pearl District—an attractive mixed-use neighborhood—was created in the 1990s in a former industrial district facing urban decay. *Credit: LikeWhere*

⁸⁶ “Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2001.” Environmental Protection Agency

⁸⁷ “The Costs and Financial Benefits of Green Buildings.” Greg Kats, for the California Sustainable Building Task Force, October 2003.

⁸⁸ <http://www.mrsc.org/ords/a5r1752.pdf>

Support Mixed-Use, Walkable Neighborhoods. Communities around the globe are using creative development strategies to preserve natural land and critical habitat, protect water and air quality, and reduce air pollution and carbon emissions.⁸⁹ Developing neighborhoods that have shops, offices and other amenities near homes would enable residents to walk, bike, or take public transit as they go about their daily lives. *Smart-growth*⁹⁰ development conserves fiscal and natural resources by reclaiming developed land and existing infrastructure and repurposing existing homes and historic buildings for mixed uses.

The great quality of life in mixed-use neighborhoods produces numerous socio-economic benefits, including:

Public health improvements. “Active transportation” (i.e., walking and biking) (1) helps prevent obesity, diabetes and heart disease, and (2) reduces air pollution, which is linked to respiratory illness, heart disease, birth defects, and cancer.⁹¹ Research shows that living near daily destinations improves seniors’ health and quality of life.⁹²

Economic and job growth. Encouraging mixed-use development “has been the most successful strategy employed by U.S. economic development organizations.”⁹³ A built-in customer base makes neighborhood businesses more successful. By walking, biking or using public transit, households cut transportation expenses and have more money available to spend in the local economy.

Expanded local tax base. Higher discretionary spending results in more sales-tax revenue. Compact residential development, compared to industrial development, generates up to 10 times the amount of revenue per acre due to greater density and higher assessed values per square foot.⁹⁴ Encouraging higher-density and infill housing will increase construction activity, which generates indirect tax revenues from business taxes and sales taxes.

Anacortes could become a city of walkable neighborhoods, each with its own shops, jobs and gathering places within a ten-minute walk of most homes. City planning code changes that increase density, infill, and mixed-use development are strongly encouraged.

Expand the Sharing Economy. The benefits of a sharing economy go far beyond cost savings. Pooling resources is good for the environment, society, and local economy. Sharing economies:

⁸⁹ Passenger cars and light-duty trucks (i.e., SUVs, minivans and pickup trucks) are responsible for 17% of greenhouse gas emissions in the U.S. <http://www.epa.gov/climatechange/ghgemissions/sources.html>

⁹⁰ *Smart growth*—that is, building communities with housing and low-cost transportation options near jobs, shops and schools—supports local economies, protects the environment, and creates neighborhoods that are beautiful, safe, affordable and easy to get around.

⁹¹ “Why Should You Be Concerned About Air Pollution?” EPA. http://www.epa.gov/airquality/peg_caa/concern.html

⁹² People 65 and over living in areas where houses are built closer to shops and services are less likely to stay home on a given day, and are more likely to use public transportation and walk to get around. “Planning Complete Streets for Aging America.” AARP

⁹³ “Industrial Vs. Mixed-Use Zoning Economic Impact and Job Creation.” CBRE Consulting. Prepared for the Los Angeles Central City Association, February 15, 2007.

⁹⁴ Ibid.

- reduce air pollution, greenhouse gases, and toxic byproducts created by producing, processing, transporting, warehousing and selling products;
- reduce consumerism and natural resource depletion;
- result in greater household prosperity;
- build trust, social cohesion and a stronger sense of community, all of which increase the likelihood that people can weather significant change.

Educate and Involve the Public. Information campaigns are needed to increase islanders’

- awareness of the risks of climate change, energy descent and economic decline,
- knowledge of how others are adapting successfully to these threats, and
- confidence (and peace of mind) that small changes will enable them to live well on a “one-planet budget.”

To foster development of affordable rental housing, for example, the City could start with a *City Briefings* article about accessory dwelling units, and follow that with information inserted in utility bills explaining the ADU concept and ordinance. As community awareness and interest in ADUs begins to grow, work with regional media to produce multiple news articles about ADU “success stories.”

Similar campaigns are needed to educate the community, including youth, that small behavioral changes, as well as larger changes to our homes and neighborhoods, will dramatically improve the environment as well as individuals’ prosperity, health, quality of life. As the planet warms and the frequency and ferocity of storms grows, islanders need to understand the limitations of local emergency response capabilities.

The same approach should be used for all information campaigns: build awareness of each issue, explain possible solutions, and show how others are benefitting from adaptation, rather than acquiescence, to conditions that threaten our well-being.

Vision 2030: Housing

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	Increase Affordable Housing	<ul style="list-style-type: none"> • Create an Affordable Housing Board. • Aggressively promote the City’s Accessory Dwelling Unit ordinance. • Set up a housing exchange system to connect people with housing needs with elders who want to stay in their own homes. • Research projects like the Lopez Community Land Trust and Bellingham Co-housing to develop a viable co-housing strategy for Anacortes. 	<ul style="list-style-type: none"> • Property tax incentives for property owners who build an ADU and have it rented. • Infill housing in areas where infrastructure is already in place (e.g., residential units above commercial property; vacant lots developed for high density; larger homes converted into multi-family residential units). • Convene residents interested in co-housing, and begin planning and construction of a pilot project within the City of Anacortes. 	<ul style="list-style-type: none"> • At least 200 Accessory Dwelling Units constructed and rented in Anacortes. • At least 4,000 new units of infill housing in Anacortes. • At least four low and middle- income, intergenerational, co-housing developments on Fidalgo and Guemes Islands. 	<ul style="list-style-type: none"> • Mayor • City Hall • Developers • Business Owners • Building Owners • Investors • Anacortes Housing Authority
2	Encourage Sustainable Building	<ul style="list-style-type: none"> • Apply for green development grants for funding sustainable City development and green building incentives. • Convene a panel to study the City of Bellingham sustainable development incentive program (i.e., education, technical assistance, and financial incentives). Develop a similar program for Anacortes. • Provide skill-share workshops on sustainable home improvement (e.g., energy assessments, weatherization, reducing energy consumption, solar installation, rainwater collection, etc.). 	<ul style="list-style-type: none"> • Encourage City of Anacortes to offer sustainable development incentives and technical assistance for green building (e.g., storm water diversion, composting toilets, green roofs, passive solar, weatherization, LEED certification, solar hot water, porous hardscapes, etc.). • Start pilot projects in Anacortes that illustrate the practicality and benefits of net-zero community-oriented building. • Provide tours of existing LEED certified homes and public buildings as part of the skill share workshop series. 	<ul style="list-style-type: none"> • City offers green building and solar incentives to encourage green renovation projects and new green construction. • City offers information and technical assistance to encourage sustainable building techniques. • City of Anacortes must meet the LEED silver or higher rating for construction of all new and renovated city buildings. 	<ul style="list-style-type: none"> • City of Anacortes Building Department • Developers and builders • City of Bellingham • Home Owners • Transition Fidalgo & Friends

		<ul style="list-style-type: none"> • Construct demonstration rain-gardens on city property to educate the public on how this simple storm water management method can improve the beauty of our city while diverting toxic runoff from our local ecosystem. 			
3	Support Mixed-use, Walkable Neighborhoods	<ul style="list-style-type: none"> • Apply for grants to help fund the construction of a LEED platinum waterfront performing arts center. • Create a <i>Housing & Neighborhoods Board</i> to research mixed-use, walkable neighborhoods around the world, with the purpose of compiling unconventional development solutions. • Include a redevelopment vision in the City Comprehensive Plan encouraging mixed-use development that increases density, supports walkable neighborhoods, and bolsters the local economy. • Bring businesses within walking distance of where people already live by repurposing existing homes for higher density and mixed-use within neighborhoods. • Improve walking and biking safety by providing more crosswalks across Commercial Avenue and 12th Street and by adding curb cuts to all sidewalks at street intersections. 	<ul style="list-style-type: none"> • Offer incentives to MJB or other waterfront property owners to develop a waterfront performing arts center. • Provide tax incentives for businesses that provide jobs within walking or biking distance of 75% percent of their employees. • Update city development codes and zoning laws to increase density, infill, and mixed-use development • Identify walkable neighborhood areas within Anacortes and encourage each area to take ownership of its own development plans and community building events. • Complete a network of paved biking paths that connects downtown Anacortes with March Point, Dewey Beach, Deception Pass, Guemes Island, and Skyline. 	<ul style="list-style-type: none"> • LEED Platinum mixed-use performing arts pavilion on MJB property that ties the city to the waterfront and brings world-class music, dance, and theater productions to our vibrant community. • Anacortes is a city of walk-able neighborhoods, each with its own shops, jobs, and gathering places within a 10-minute walk of most homes. • Anacortes has a population density of 2,500 people per square mile to support vibrant neighborhoods, public transit, and mixed-use development. 	<ul style="list-style-type: none"> • City council • Mayor of Anacortes • MJB and other developers • Transition Fidalgo & Friends • City of Anacortes Planning Department

4	Expand the Sharing Community	<ul style="list-style-type: none"> • Establish neighborhood councils with the goal of strengthening neighborhood identity and building relationships between neighbors. • Establish a gathering space for each newly identified neighborhood. • Start the K Avenue Tool Library as a pilot program to demonstrate how the sharing community can expand beyond books. • Establish a community Food Hub in one neighborhood as a demonstration project. A food hub provides facilities and a center of focus for <i>Really Local Foods</i> produced and/or processed in each neighborhood. They can include gardens, orchards, kitchens, root cellars, wood-fired ovens, preserving equipment, bulk purchasing, and more. • Expand the TmeBank by partnering with existing organizations and recruiting diverse members with varied skills. 	<ul style="list-style-type: none"> • Each neighborhood has a council that plans and hosts quarterly gatherings or block parties where people meet and socialize with their neighbors. Encourage newly identified neighborhood councils to take on a sharing community pilot program. • Tool library has 200 active members and offers a wide array of tools from cider presses to sewing machines. Promote the tool library and recruit new members by offering skill- share workshops and DIY classes using tools available for loan at the library. • Five neighborhoods have established Food Hubs that offer cooking facilities and gardens. Orchards are beginning to bear fruit. Encourage activity at Food Hubs by starting a community cooking competition between neighborhoods. • TimeBank has 300 members with skills ranging from cooking to acupuncture to welding. Continue to expand the TimeBank by working to include members of all ages. 	<ul style="list-style-type: none"> • Fidalgo and Guemes islands have twelve defined neighborhoods with active councils and regular meetings. Each neighborhood has its own gathering space and Food Hub. • Tool library merges with traditional library and is operated by the City of Anacortes. • All residents have community gardens and kitchens within walking distance of their homes. Bartering occurs between community Food Hubs to maximize local food variety throughout the city. • The TimeBank has 1000 active members and offers a diverse range of domestic, industrial and professional services. It is possible to use time dollars to obtain most basic services. 	<ul style="list-style-type: none"> • Existing Service Organizations • City Hall • Anacortes Library • Fidalgo & Friends Timebank • Transition Fidalgo • Neighborhood Councils • Eat Your Yard • Anacortes Farmer's Market
5	Educate and Involve the Public	<ul style="list-style-type: none"> • Start a column in the <i>Anacortes American</i> that reports on how the Fidalgo and Guemes communities are preparing for climate change. • Integrate skill-share workshops into Anacortes Parks & Recreation programs 	<ul style="list-style-type: none"> • <i>City Menu</i> includes skill-share classes (e.g., art, cooking, woodworking, gardening exercise, welding, budgeting, practical emergency preparedness, green building, etc.). • Set up friendly competitions between neighborhoods to get 	<ul style="list-style-type: none"> • Develop a page on the city website that measures success in building neighborhood resiliency throughout the city. Make it easy for neighborhoods to see how they are 	<ul style="list-style-type: none"> • <i>Anacortes American</i> • Anacortes City Parks & Recreation Department • Mayor of Anacortes

		<p>to attract a wider range of participants.</p> <ul style="list-style-type: none"> • Expand the skill-share workshop series to include a wider variety of topics held throughout the year. • Offer Community Resilience classes as an elective at the high school and middle school. 	<p>people excited about getting involved and making changes.</p> <ul style="list-style-type: none"> • City website has page or blog that reports on climate change-related information relevant to our community. Citizens can go to this page to find out how climate change is progressing and what our community is doing to create resilience. • Start a youth action program to educate kids and get them involved in building resilience. Make climate change issues accessible and resilience appealing! 	<p>doing and gain inspiration from others.</p> <ul style="list-style-type: none"> • Community Resilience education is integrated into the mandatory curriculum at all levels of public education in Anacortes. • Offer scholarships to students pursuing education in sustainable development, community building, and sustainable food systems. 	<ul style="list-style-type: none"> • Neighborhood Councils • Anacortes School District • Boys & Girls Club • Transition Fidalgo & Friends
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VISION 2030: TAKING CARE OF OUR NATURAL RESOURCES



Early Coast Salish tribes lived off the natural bounties of sea and land for sustenance, harvesting only the resources they needed. Salmon was dried for winter consumption. *Credit: University of Washington Libraries. Special Collections. NOHAI. 1955.970.470.23*

by eating insects, pollinating plants, and dispersing seeds, faced confusing shifts in times of bloom, fruiting, and insect hatch.

In 2030, many citizens are members of *FIN (Fidalgo Island Naturalists)*, which helps people learn how to support wildlife through climate changes that are coming too quickly for gradual adaptation. Islanders learn what types of plants provide wildlife value and require less water. They build and maintain nest boxes, conduct species counts, and regularly sign up for “citizen science” projects, such as helping to monitor and gather data on local streams, shorelines, forests, wildlife, and air quality.

One project the group completed in 2020 was a community-mapping initiative which notes key habitats and other natural features in need of protection. This baseline inventory includes heron nesting and foraging areas, raptor nests, amphibian breeding ponds, migratory songbird habitat, coyote and fox dens, beaver lodges, wildflower patches, and more. The *Salish Nature Center* serves as a repository for this information and is the go-to place for those eager to know if the hummingbirds have arrived, where to see the biggest trees, or when the next mushroom foray is scheduled.

The people of Fidalgo and Guemes Islands have benefited greatly from those who came before: the Samish and Swinomish who passed on traditional knowledge; early settlers who preserved land for future generations; and latter-day islanders who created parks and community forest lands. All of these efforts arose against a backdrop of decades-long resource extraction such as fishing, logging, and mining.

By 2013, it had become evident that a steadily warming climate would further strain the islands' natural resources. Climate impacts stressed wildlife already struggling with habitat loss, pollution and invasive species.⁹⁵ Songbirds, which play a vital role

⁹⁵ <http://thinkprogress.org/climate/2013/06/24/2175741/birds-highly-threatened-by-climate-change-report-warns>

FIN also includes a club for young naturalists, and a *Fidalgo SLOW* committee that encourages residents to embrace a slower-paced lifestyle. Star-gazing, tidepool-sitting, forest ambles, bird-watching, walking instead of driving — all are enthusiastically promoted. Their motto — "Go slow and let the wonder grow" — reflects an understanding that the more connected we are to our natural home, the more we will honor and care for it.



Credit: Vince Streano

The grounds of private and public buildings are landscaped for wildlife, and Fidalgo and Guemes Islands are certified Community Wildlife Habitats. Ace of Hearts Creek, which for so long ran underground to Fidalgo Bay, is now daylighted in many areas to the delight of residents. Detention/retention ponds have been turned into oases of native plants that attract birds, bees, and butterflies.

The natural setting of the forest lands has been extended into the city through wildlife corridors⁹⁶ that allow animals easier access to the resources they need to survive. (One corridor example is H Avenue, now planted with native flora on both sides all the way from the woods to 32nd St.) A citizen volunteer corps helps city staff maintain the wildlife corridors with annual pruning and regular removal of invasive species.

In 2030, islanders must deal with climate change manifesting as (1) increased rainfall during the winter, promoting more run-off into bays; and (2) reduced summer water supply, creating more fire risk in island forests.⁹⁷ Rain gardens and permeable surfaces in parking lots and driveways help to absorb the runoff from heavy rains, and volunteers diligently patrol the forests through drought periods.

Ocean acidification⁹⁸ due largely to the uptake of atmospheric carbon has affected marine species such as oysters, crabs, and pteropods, a key prey species of salmon, seabirds and whales.⁹⁹ Warming

⁹⁶ Wildlife corridors can help reduce the negative effects of habitat fragmentation by allowing wildlife to move between large patches of remaining habitat. <http://www.biologicaldiversity.org/publications/papers/wild-corridors.pdf>

⁹⁷ "For the Skagit Basin, precipitation projections indicate increases of 9.8% in the winter, 8.0% in the spring and 19.2% in the fall, but a 27.6% decrease in the summer by the 2080s compared to the late 20th-century seasonal averages." Skagit Climate Consortium report at <http://www.skagitclimatescience.org/skagit-impacts/temperature-and-precipitation-and-ecosystems/>

⁹⁸ "The principal driver of acidification both globally and regionally is the increasing concentration of atmospheric CO₂, which affects the chemistry of the ocean when absorbed (Feely et al. 2008; Doney et al. 2009; NRC 2010). Atmospheric CO₂ concentrations are higher now than at any time in at least the past 650,000 years, and current estimates are that about one-quarter of the human-derived CO₂ released to the atmosphere over the last 250 years is now dissolved in the ocean." *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. Edited by Amy K. Snover, Philip W. Mote, Meghan M. Dalton, 2013. p.75. <http://cses.washington.edu/db/pdf/daltonetal678.pdf>

⁹⁹ Many species are vulnerable to ocean acidification as they depend on calcium carbonate to build and maintain shells, skeletons, and other vital body parts. More than 30% of Puget Sound's marine species are calcifiers, including barnacles, sea urchins, sand dollars, sea stars, sea cucumbers, crabs, and

waters have also taken a toll, altering food chains and migrations.¹⁰⁰ The Shannon Point Marine Center works with world-class researchers to understand how marine species are affected by acidification and warming, and keeps islanders informed about changing ocean conditions and impacts. A citizen network closely monitors trends in water chemistry and helps to gather data on other impacts, such as storm-surge related to sea-level rise, and the impacts on Padilla Bay from sediment loads deposited by the Skagit River.¹⁰¹

By combining the input of scientists with the historical knowledge of local tribes and the determination of citizens, efforts in 2030 to aid marine populations are focused on data collection, carbon dioxide reduction, and the control of nutrient runoff through strict enforcement of shoreline buffers and septic-system upkeep.

To further ease the strain on marine species, refuges exist to protect organisms vulnerable to over-harvesting and other stressors. Nearly all of the shoreline has been made fish-friendly with soft armoring such as logs instead of seawalls, and many beaches include shaded areas with gravel to encourage spawning.¹⁰²

The one process now going on that will take us millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us.”

E. O. Wilson

shellfish such as oysters, geoducks and other clams, mussels, and abalone. "Impacts on species like pteropods and copepods are a significant concern because of their ability to affect entire marine food webs." Report from the Washington State Blue Ribbon Panel on Ocean Acidification, Nov. 2012

<https://fortress.wa.gov/ecy/publications/publications/1201015.pdf>

¹⁰⁰ "Ocean temperatures off the Northwest coast have increased in the past and, though highly variable, are likely to increase in the future, causing shifts in distribution of marine species and contributing to more frequent harmful algal blooms." *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. Op.cit., p. xxvii

¹⁰¹ Excessive amounts of sediment can stress a variety of species and habitats. For example, Padilla Bay's eelgrass meadows, which provide nearshore habitat for marine species, as well as food for waterfowl, can be buried by increased sediment. On the other hand, an increased sediment load may also help maintain estuarine habitats "as sea level rises in response to climate change by enabling marshes and coastlines to accumulate sediment and build topography."

<http://pubs.usgs.gov/fs/2011/3083/>

¹⁰² There is broad scientific consensus that "hard" armoring – the construction of bulkheads, seawalls, riprap or other structures to harden a shoreline against erosion – is generally harmful to marine ecosystems. It protects upland sites from short-term erosion, but can harm shoreline habitat and dramatically change beaches. Many species require healthy intertidal habitats for food, migration, shelter, and spawning, and armoring structures can bury habitat and affect the supply of beach sediment, reducing critical habitat for species such as forage fish and shellfish. "Soft" armoring alternatives (e.g. large wood or gravel berms to provide wave protection and vegetation to stabilize slopes) can provide protection without causing as many adverse impacts. See

<https://fortress.wa.gov/ecy/publications/publications/1006004.pdf>

Recognizing that not only the sea, but the soil and the trees are important carbon sinks,¹⁰³ islanders passed an initiative to prohibit clear-cuts and allow only selective logging.¹⁰⁴ Additionally, "soil stewards" hold regular workshops to teach people how to practice no-till¹⁰⁵ gardening and farming.

Regional air quality is cleaner in 2030 as the Port no longer allows ocean-going vessels to run generators while docked, and fewer diesel-fueled tankers pull in to March's Point. With conventional, easy-to-extract sources of oil almost non-existent, local refineries that in 2013 had shifted to unconventional oils such as tar sands and shale oil have finally declared that path a dead-end.¹⁰⁶ Recognizing that the extraction of such fossil fuels would ruin land and water resources in other parts of the continent and that burning the fuels would sharply increase greenhouse gas emissions,¹⁰⁷ refinery owners in 2030 are working to develop more sustainable economic opportunities. Islanders have also improved local air quality by increasing tree cover, decreasing the need for cars through shuttle and car-share services, and replacing older wood stoves with clean-burning models.



Credit: Vince Streano

wildlife. Islanders realize that their well-being depends upon the health of the natural world and hold as an underlying philosophy Aldo Leopold's land ethic: "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."

In 2030, islanders are careful to use natural resources in a way that meets their needs without compromising the ability of future generations to do the same. The soil, air, water, trees, and wildlife are the treasured "commons" of the community and as such are included as members of the community. When faced with decisions regarding the islands' natural resources, citizens are appointed to speak up for the soil, air, forests, water and



Skagit County Beach Watchers.

Credit: Ivar Dolph

¹⁰³ A "carbon sink" is anything that absorbs more carbon than it releases. Forests, soils, and the oceans are all carbon sinks. Without them, atmospheric carbon dioxide levels would be much higher. Many scientists now warn that sinks may reach capacity and become sources of carbon emissions if we continue to burn fossil fuels.

¹⁰⁴ Besides being a source of beauty and wildlife habitat, an acre of trees would counter the yearly emissions of about 2.7 cars: http://www.nytimes.com/2012/12/04/science/how-many-pounds-of-carbon-dioxide-does-our-forest-absorb.html?_r=0.

¹⁰⁵ Reducing tillage increases the ability of the soil to store carbon. "No-till: The Quiet Revolution," David Huggins and John Reganold, *Scientific American*, July, 2008, p.74.

¹⁰⁶ See Background Information, page 69.

¹⁰⁷ The Congressional Research Service estimates that tar sands oil results in at least 14% more greenhouse-gas emissions than do more conventional crude oils. Congressional Research Service report, March 15, 2013. <http://www.fas.org/sgp/crs/misc/R42537.pdf>

Potential Strategies/Actions

Educate and Involve Citizens. The key to caring for our natural world lies with a committed, knowledgeable citizenry. There are already many local people keenly interested in wildlife and actively volunteering to safeguard our natural resources. Witness the popularity of current programs that engage people as beach stewards, or to monitor streams and watersheds, count heron nests, and collect data on harbor porpoises. Anacortes Senior College classes focused on wildlife are always among the first to fill up, and membership is strong in local organizations such as Friends of the Forest, Skagit Land Trust, Skagit Audubon, and the Backyard Wildlife Habitat project. Many residents live on Fidalgo and Guemes because of the islands' natural beauty and have shown not only a desire to understand the natural world but also a fierce willingness to protect it.

Thus, it should be relatively easy to draw on this love and protectiveness to engage people in monitoring how climate change and other impacts are affecting natural systems, and to involve them in helping to mitigate impacts. Possible actions include:

- Form a corps of citizen naturalists knowledgeable about local flora and fauna and educated about the stresses on natural systems from a destabilizing climate and other impacts such as plastic pollution in local waters. One action such a group might undertake is a community mapping project.¹⁰⁸ Meeting the challenge of protecting (or restoring) natural places and wild populations can begin with mapping, which (1) helps us to better know our islands' natural features and creatures; and (2) provides a valuable tool for baseline records that will help keep track of ecosystem changes.
- Promote carbon-reduction efforts through tree-planting and soil conservation.¹⁰⁹ "Soil stewards" can help educate gardeners and farmers on careful soil management that includes minimal tillage, cover cropping, and crop rotation. The judicious use of fertilizer will help prevent nitrogen runoff that can create excessive algae growth, leading to a lack of oxygen that causes fish die-offs.
- Increase ocean acidification literacy and efforts to reduce land-based pollutants. The report from Washington's Blue Ribbon Panel on Ocean Acidification¹¹⁰ may help islanders determine how they can best contribute in six major action



Water sports are clean, healthy fun for all ages. Low-impact marine businesses attract dollars to a community, not just for recreation, but for lodging, dining, and entertainment as well. *Credit: Vince Streano*

¹⁰⁸ A good guide to community mapping is *Giving the Land a Voice: Mapping Our Home Places*. Sheila Harrington, Ed.

¹⁰⁹ <http://www.esa.org/esa/wp-content/uploads/2012/12/carbonsequestrationinsoils.pdf>

¹¹⁰ Op.cit.

areas: (1) Reduce emissions of carbon dioxide; (2) Reduce local land-based contributions to ocean acidification; (3) Increase our ability to adapt to and remediate the impacts of ocean acidification; (4) Invest in Washington's ability to monitor and investigate the causes and effects of ocean acidification; (5) Inform, educate, and engage stakeholders, the public, and decision makers in responding to ocean acidification; and (6) Maintain a sustainable and coordinated focus on ocean acidification at all levels of government.

Promote Sustainable Nature Tourism. A healthy environment is the basis for economic prosperity and quality of life.¹¹¹ The local Chamber of Commerce should recognize the value of our natural amenities to an economy that has shifted from resource extraction to resource celebration, and promote the islands' natural beauty to attract businesses and tourists. Statewide, over \$1.7 billion is spent annually on wildlife-watching activities which also support more than 21,000 jobs in Washington, making it second only to Boeing.¹¹² Wildlife-viewing is the #1 outdoor activity in the U.S.¹¹³

- Celebrate the islands' natural beauty through special events (i.e. the Waterfront Festival, Fidalgo Bay Day) that center on natural features and help to promote their preservation.
- Set up structures such as boardwalks, viewing blinds, kiosks, and interpretive signs to increase understanding and promote conservation of local nature for both residents and tourists.
- Create a nature center. An area so steeped in natural beauty cries out for a place to go to for information about the local geology, weather patterns, flora and fauna, soils, wetlands, marine habitats, and traditional native land uses (berry picking, fishing, etc). Having such an information center would help strengthen the connection between people and place and keep islanders informed about changes/threats to local eco-systems.

Advocate for Policy Changes

- Encourage Low Impact Development that mimics natural processes to help protect waterways from stormwater runoff. The heavier rains predicted for our region¹¹⁴ will lead to more runoff, which degrades water quality, harms aquatic habitat and species, and increases flooding. Rain gardens¹¹⁵ and bioswales¹¹⁶ installed on private and public property are ways of reducing runoff, removing pollutants, and recharging groundwater, and they can also

¹¹¹ As just one example, "Shellfish aquaculture, which provides many jobs and 49% and 72% of the commercial fishing landing value in Oregon and Washington, respectively, is threatened by ocean acidification. Climate-driven changes in the distribution, abundance, and productivity of key commercial species in Oregon and Washington could impact landings and revenues, which averaged around \$275 million per year from 2000 to 2009." *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. Op.cit., p. 89

¹¹² Wildlife watching also yields \$426.9 million in job income and generates \$56.9 million in state and \$67.4 million in federal tax revenues each year. <http://wdfw.wa.gov/viewing/tourism/>

¹¹³ Ibid.

¹¹⁴ Op.cit: Skagit Climate Consortium report

¹¹⁵ http://water.epa.gov/learn/training/wacademy/upload/raingardens_dec10_2slides-2.pdf

¹¹⁶ The major difference between a bioswale and a rain garden is that a bioswale is designed to slowly move water from one area to another and often ends in a rain garden.

reduce storm water infrastructure costs.¹¹⁷ Additionally, impervious surfaces such as parking lots should be made of permeable materials wherever possible.

- Encourage the city to review its 1996 Park and Recreation Comprehensive Plan, in which the “City-in-a-Park” concept invited “everyone in the community to step back and view the city in the larger context of its natural landscape.” From this perspective, islanders focus on such things as creating or preserving habitat as part of any new project, promoting “adopt-a-park” programs, emphasizing walking paths and expanding beach access.
- Strengthen Environmental Impact Statements to include an ecosystem service evaluation that assigns a dollar value to the benefits derived from forests, wetlands, etc. Even though at least one ecologist¹¹⁸ has questioned the intelligence of a civilization that would demand a “quantitative estimate of the value of its own umbilical cord,” such an analysis can help make the case for conservation.

“Along with environmental impact statements (EIS), perhaps future economists can devise what might be called GIS, or ‘grandchild impact statements.’

James Eggert

¹¹⁷ Also, according to the Washington State Association of Realtors, a properly installed rain garden can boost property values. <http://www.12000raingardens.org/about-rain-gardens/faq/>

¹¹⁸ David Ehrenfeld

Vision 2030: Natural Resources

Item #	Overall Goal	Near Term Goals 0-5 Years	Intermediate Goals 5-10 Years	Long Term Goals 10-20 Years	Involved Parties
1	A corps of citizen naturalists	--Gather interested folks to educate and train --Select projects (i.e. a community mapping survey - see Goal #2)	Work proceeds on selected projects	A strong corps of local citizens committed to safe-guarding our natural resources	Citizens, Beachwatchers, Audubon, Friends of the Forest, Fidalgo Backyard Wildlife Habitat, Senior College, Shannon Point Marine Center, AHS Green Club....
2	Baseline inventory of local natural resources	Recruit citizens to gather data on key habitats and other natural features in need of protection	--Increase collection of baseline records --Monitor progress	A solid baseline inventory in place, with plans for regular updates	Citizens, Beachwatchers, Audubon, Friends of the Forest, Fidalgo Backyard Wildlife Habitat, Senior College, Shannon Pt Marine Center, Skagit Conservation District, Skagit Land Trust
3	Increased carbon-reduction efforts	Empower leaders and volunteers of organizations and businesses to identify and track carbon sources and implement reduction efforts (e.g. increasing tree cover, using good soil management, increasing energy efficiency)	Continue to identify sources of carbon and act to reduce them as feasible	Citizens, businesses, organizations, local government consider carbon reduction a top priority and act accordingly	Widespread
4	Increased ocean acidification literacy and efforts	--Local series of news articles, series at the library, presentations to service clubs, AHS Green Club, etc. --Review Wash. State Blue Ribbon panel recommendations to determine avenues to assist	--Increased knowledge of ocean acidification among community --Implementation of citizen science monitoring projects if feasible	Strong community involvement in addressing ocean acidification	Local Newspapers, Service Clubs, Library, Transition Fidalgo, Beach Watchers, Shannon Pt Marine Center, Local Shellfish Industry, UW Climate Impacts Group

5	Sustainable nature tourism	<ul style="list-style-type: none"> --Provide input on sustainability and local resources to existing event-planning groups --Recruit "green" folks to be involved in planning --Promote events, create structures (i.e. boardwalks, viewing blinds, interpretive signs, kiosks) 	<ul style="list-style-type: none"> --Set up a planning committee to consider creating a local Nature Center --Investigate incorporating the Nature Center into the existing Visitor Center --Continue to promote tourism events that don't compromise the resilience of natural ecosystems 	<ul style="list-style-type: none"> --Nature Center on Fidalgo Island --Thriving sustainable nature tourism 	Chamber of Commerce, Port of Anacortes, Anacortes Arts Festival, Transition Fidalgo, Newspapers, Service Clubs, Businesses
6	Increased low-impact development	<ul style="list-style-type: none"> --Educate community on LID techniques --Incorporate LID policies and regulations into the 2016 Comprehensive Plan --Review 1996 "City in a Park" Parks & Rec plan to help inform LID goals --Gather local experts/professionals willing to educate and support group or individual actions 	<ul style="list-style-type: none"> --Continue education efforts --Monitor progress 	<ul style="list-style-type: none"> --New development and remodels require adherence to LID policies --Rain gardens, permeable driveways and parking lots are the norm 	Citizens, City of Anacortes, Port of Anacortes, Skagit County, Skagit Conservation District
7	Stronger environmental impact statements	<ul style="list-style-type: none"> --Educate re/ importance of including ecosystem services as integral part of EIS --Identify and recruit knowledgeable citizens to begin process of implementation 	Functioning ecosystem component of EIS	Widespread understanding (and protection) of valuable ecosystem services	Citizens, City Planning Commission, County Planning Commission

VISION 2030: CLEAN, MULTI-MODAL TRANSPORTATION

After a century of low-density development, Anacortes homes in 2014 were segregated from each other and from commercial and industrial areas. People had to travel farther for work, errands and leisure. Lacking decent public transit and “complete streets,”¹¹⁹ islanders were locked into car dependency. Longer commutes generated more gas and diesel pollution (containing carcinogens¹²⁰), more greenhouse gases, and a higher cost of living (i.e., higher household transportation costs).

The lack of safe *active-transportation* amenities (e.g., walking and biking infrastructure) reduced the physical-fitness opportunities necessary for optimal health. As well, Anacortes’ car-centric transportation system disenfranchised non-drivers (i.e., youth, seniors, people with disabilities, and the less affluent).

Between 2014 and 2022, the price of gasoline increased 68% to \$5.20/gallon,¹²¹ producing multiple negative impacts in the community:

- rising household transportation costs, which weakened consumer spending and the local economy
- a decline in recreational boating and tourism (both key Anacortes industries)
- shortfalls in city sales tax revenue, resulting in budget deficits, service cutbacks, and an eroding infrastructure and quality of life
- a decline in business profitability, resulting in higher unemployment (particularly in transport-dependent industries such as tourism and marine services)
- a decline in gas-tax revenue, a funding source for road and bridge maintenance



Passenger vehicles account for 17% of greenhouse gases that contribute to climate change.

<http://www.epa.gov/climatechange/ghgemissions/sources.html>

Credit: Reuben de Rijcke

¹¹⁹ Smart Growth America defines “complete streets” as *streets for everyone* (i.e., designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.) <http://www.smartgrowthamerica.org>.

¹²⁰ International Agency for Research on Cancer, *Outdoor air pollution a leading environmental cause of cancer deaths*, October 17, 2013. http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf. See also International Agency for Research on Cancer, *Diesel Engine Exhaust Carcinogenic*, June 12, 2012. http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_E.pdf.

¹²¹ Conservative estimate assumes: (1) a 2014 price of \$3.10/gallon, (2) an annual gas price increase of 5.3%, which is based on 17 years of West Coast gasoline prices (i.e., 1995 through 2012), and (3) the improbable assumption that increasing oil scarcity and more costly extraction methods will not cause future prices to rise at a higher rate.

Increasing oil prices, air pollution, and global warming concerns, as well as new tax incentives and advanced technologies, helped spur consumer demand for clean, high-efficiency vehicles (e.g., electric, plug-in hybrids, conventional hybrids, compressed natural gas, and high-efficiency conventional vehicles). Now, in 2030, many citizens have electric cars or ride electric shuttles, and the city's entire fleet of light-duty vehicles consists of electric and plug-in hybrids. Public charging stations are available at City Hall and the Washington State Ferry Terminal.

Thanks to these new clean transport options, as well as to air pollution policies recommended by the Community Environmental Health Assessment group,¹²² the city in 2030 is well on its way to meeting its emission-reduction targets and local air quality is much improved. Anacortes now also boasts a high proportion of “complete streets” as well as 20-mph speed limits in residential neighborhoods, making it safe and easy for families to walk or bike to work, school, shops, restaurants, and to visit family and friends.

In 2016, Anacortes expanded its *Auto Magic* program¹²³ to encourage citizens to reduce single-occupant vehicle miles traveled (VMT) by ridesharing, walking, bicycling or using public transit. The annual winners—the community groups with the highest number of miles saved per participant—receive the right to allocate city budget dollars (now \$10,000) to any city program. Groups competing in the friendly challenge have directed their wins to a number of projects that increase resiliency, including building community gardens, bike information kiosks, additional sidewalks to encourage walking, and the purchase of a software system to track the city's progress toward its energy-efficiency goals.

In addition to the *Auto Magic* program, a variety of clean transportation options have reduced islanders' car dependency:

- Electric shuttles, pedicabs (bicycle rickshaws), and tuk-tuks (motorcycle rickshaws) run frequently between the downtown commercial district, neighborhoods, and popular island destinations;
- Seasonal solar-powered water taxis transport residents and visitors from points along the waterfront esplanade to the Washington State Ferry Terminal and Washington Park;
- FidalGO Cars, an employee-owned rental agency with a small fleet of electric and plug-in hybrid cars;
- A-Town Bikes!,¹²⁴ a nonprofit cooperative that makes conventional and electric bicycles available for shared use on a short-term basis;
- The Fidalgo & Friends TimeBank enables members to share rides, cars, and light-duty trucks.

¹²² The CEHA originated in 2014 to identify air pollution risks and emission sources, and to establish policy priorities for improving local air quality.

¹²³ *Auto Magic* is a competition begun in 2009 by Councilwoman Erica Pickett to encourage the reduction of single-occupant car use. The prize at that time for the highest reduction in commuter miles was the opportunity to direct \$1000 of city funds toward a city project. Another \$1000 was awarded for the highest reduction in non-commuter miles. In six years, the *Auto Magic* program has saved 119,000 passenger car miles.

¹²⁴ Suggestion offered at a community visioning session, *Transition Fidalgo & Friends*, April 30, 2013.

Biking is booming in 2030, thanks to the foresight and early work of the Anacortes Bike/Pedestrian Advisory Committee.¹²⁵ Anacortes now has a 15-mile network of comfortable, safe, connected walking and biking routes.

Our community reached a pinnacle in bike transport with the construction of the *Skagit Valley Trail* (SVT) connecting Mount Vernon to the Washington State Ferry Terminal in Anacortes. The SVT enables islanders to bicycle to Mount Vernon to connect with buses and trains

for long-distance travel, and encourages tourists to bring bicycles here via Amtrak to enjoy regional eco-adventure vacations. In 2030, the *Island 100*—an annual multi-island bike ride—celebrated its third anniversary, bringing 500 participants and 50 support staff to Anacortes in September. Today, Fidalgo, Guemes and the San Juan Islands are a premier bicycling destination. The SVT is the cornerstone of the region’s thriving *Sustainable Salish Sea Islands* tourism industry.



Credit: Vince Streano

Potential Strategies/Actions

Communities can do nothing to affect gas prices or fuel safety, but we can and should make changes to mitigate the environmental, economic and health risks inherent in the transportation industry.

Create Equitable “Complete Streets”

“Complete streets” are designed and operated to allow residents of all ages and abilities (including pedestrians, bicyclists, motorists, and transit riders) to move safely, conveniently and comfortably throughout a community. “Complete streets” enable residents to drive less, save money, and engage in healthier *active transportation*.


With its “Complete Streets” ordinance, Anacortes is eligible for grant funding from the Washington State Department of Public Transportation.¹²⁶ “Complete Streets” cities have a sense of place (e.g., Edmonds),¹²⁷ more community engagement, as well as other advantages:

¹²⁵ See *A Bicycle/Pedestrian Plan for Anacortes*, August 2012.


¹²⁶ WSDOT has a grant program to fund “Complete Streets” projects on “city streets as well as city streets in communities that also serve as state highways.” Washington State Department of Transportation, *Washington’s Complete Streets and Main Street Highways*, November 2011. http://www.wsdot.wa.gov/NR/rdonlyres/A49BBBE7-16BC-4ACE-AF2B-3C14066674C9/0/CompleteStreets_110811.pdf

¹²⁷ *Ibid.* Washington communities with “Complete Streets” policies include: Airway Heights, Issaquah, Kirkland, Redmond, Renton, Seattle, Sedro-Woolley, University Place, Tacoma, Edmonds, Everett, and Spokane.

- **Improved public safety:** Reducing auto traffic translates into increased safety for pedestrians. Lowering speed limits could make our neighborhoods safer for children and adults who walk and ride bicycles. And, having more people on the streets deters crime.
- **Improved public health:** Driving increases inactivity, and is linked to increased illness and deaths (e.g., heart disease, stroke, colon and breast cancer, diabetes, obesity and osteoporosis).¹²⁸
- **Improved quality of life:** One-third of Americans do not drive,¹²⁹ and they are marginalized by a lack of safe, convenient access to community amenities and events. This lack of access limits non-drivers' opportunities, mobility, and engagement in community, which makes us less resilient.
- **Less air pollution:** Reducing vehicle miles traveled translates into less vehicle exhaust (a cause of respiratory and cardiovascular diseases, and cancers).
- **Less greenhouse gas:** Climate change is accelerating, and passenger vehicles are responsible for 14% of greenhouse gas emissions.¹³⁰ We must shift to less oil-dependent transportation to reduce emissions.
- **Lower cost of living:** Sprawling towns with “incomplete streets” and inadequate public transit—like Anacortes—force residents into car-dependency. The typical U.S. household spends 36% more on transportation than on food (i.e., \$8998/year and \$6599/year, respectively).¹³¹
- **Improved economy:** A 25% reduction in household vehicle miles traveled would unlock \$15.6 million of household income to be spent in the local economy.¹³² A “Complete Streets” project in New York City, for example, resulted in a 49% retail sales increase at businesses along new protected bike lanes (compared to 3% borough-wide).¹³³



Complete streets have the potential to economically benefit a community. Increasing accessibility, improving safety, incorporating sustainable practices, and improving the aesthetic appeal of a town can draw visitors, promote business growth, and add value to a community's character and identity.



WSDOT

Inoculate Our Vulnerable Economy

A paved bicycle trail connecting Mount Vernon to the Washington State Ferry Terminal in Anacortes would ensure islanders' mobility and could help our region capture market share in the burgeoning bicycle tourism industry. In 2012, bicycling activity was “an important reason for more

¹²⁸ Maggie L. Grabow, et al, *Air Quality and Exercise-Related Health Benefits from Reduced Car Travel in the Midwestern United States*, Environmental Health Perspectives, January 2012; 120(1): 68–76.

¹²⁹ *What are complete streets and where should we build them?*

<http://www.walkinginfo.org/faqs/answer.cfm?id=3467>

¹³⁰ See: Environmental Protection Agency, *Sources of Greenhouse Gas Emissions*,

<http://www.epa.gov/climatechange/ghgemissions/sources/transportation.html>

¹³¹ Bureau of Labor Statistics, *Consumer Spending—2012*, Sept. 10, 2013.

<http://www.bls.gov/news.release/cesan.nr0.htm>.

¹³² Estimate based on (1) a 25% reduction in VMT, (2) an average household transportation-cost saving of \$2250, and (3) 6924 occupied housing units in Anacortes. U.S. Census Bureau, *2007-2011 American Community Survey 5-Year Estimates*.

<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

¹³³ Jonathan Maus; *Money talks: The economic impact of livable streets*. BikePortland.org. October 25, 2012. <http://bikeportland.org/2012/10/25/money-talks-the-economic-impact-of-livable-streets-79306>

than half a million trips in Oregon,” and bicycle-related trips injected \$400 million into the Oregon economy.¹³⁴

Biking, hiking, kayaking, water sports, gardening and culinary tours, scenic solar-airplane flights, electric-sailboat cruising, whale-watching, sporting events, and other sustainable-tourism activities, could attract West Coast visitors to our islands for eco-tourism adventures.

Assuming that we construct the 13-mile paved bicycle trail in 2020, it would cost \$4.1 million to build and could inject \$506 million¹³⁵ annually into the regional economy.

City Leadership



Hybrid police car. *Credit: Dantada.*

The City could use its legislative, purchasing, and political power to mitigate the environmental, economic, health, and quality-of-life risks inherent in the transportation industry. Specifically:

- Reduce the city’s carbon footprint (e.g., purchase electric and high-efficiency vehicles; minimize street sweeping; require garbage cans be placed on one side of the street to dramatically reduce garbage truck emissions, etc.).
- Give annual prizes for the top suggestions from citizens and city employees to improve energy-efficiency and reduced greenhouse gases.
 - Pursue WSDOT grant funding for “Complete Streets.”
 - Collaborate with regional, state and federal partners to fund the Skagit Valley Trail. The sooner it is built, the sooner our region can start generating bicycle-tourism revenue.
 - Public transit is essential for future regional mobility. Work with Skagit Transit to improve service and reduce air pollution and greenhouse gas emissions. Specific transit suggestions from *Transition Fidalgo & Friends’* community visioning session¹³⁶ include: frequent service, improved routes, covered transit stops with benches, and electronic schedules.
 - Provide amenities that encourage bicycling¹³⁷ (e.g., separated bike lanes, covered bike racks, showers at City Hall, etc.).

¹³⁴ “Oregon Bike Travel Study.” Prepared for the Oregon Tourism Commission, Dean Runyan and Associates, 2012.

¹³⁵ Estimated revenue based on (1) 2013 study showing that bicycle tourism injects \$400 million annually into the Oregon economy, and (2) a 3% inflation rate. *The Economic Significance of Bicycle-Related Travel in Oregon*, Dean Runyan and Associates, April 2013.

¹³⁶ *Transition Fidalgo & Friends’* community visioning session, April 30, 2013.

¹³⁷ *Ibid.*

- Provide amenities that make Anacortes pedestrian friendly¹³⁸ (e.g., benches every two blocks, water fountains, pedestrian plazas, connected trails with scenery, etc.).
- Enact the recommendations for Anacortes described in the 2006 report, “Walkability & Livability Workshop,”¹³⁹ including: (1) create compact and efficient intersections and a boulevard with frontage shopping, and (2) coordinate land use and development to allow pedestrians as much comfort as drivers in reaching their destinations.
- Support the Community Environmental Health Assessment group to identify pollution health risks and emission sources, and establish policy priorities for improving local air quality.
- Educate the community that unrestrained traffic growth increases air pollution, disease, and global warming. Show how other communities are benefitting from increased walking, biking, and public transit use. Suggest how residents can incorporate new active-transportation options into their daily commutes (e.g., a walking/biking route map, bike-helmet fittings, walking clinics, etc.).



Credit: Vince Streano

¹³⁸ Ibid.

¹³⁹ Dan Burden, Director of Walkable Communities, Senior Urban Designer, Glattig Jackson, *Walkability & Livability Workshop*. Sponsored by Skagit Council of Governments. Spring, 2006.

Vision 2013: Transportation

Overall Goal	Near Term Goals (Next 5 Years)	Intermediate Goals (6-10 Yrs)	Long Term Goals (10-20 Yrs)	Involved Parties
<ul style="list-style-type: none"> Develop a clean, multi-modal transportation system. 	<ul style="list-style-type: none"> (2014) Develop a Complete Streets <i>Action Plan</i> (i.e., determine optimal strategies to “add teeth” to the City’s Complete Streets Ordinance (e.g., require a development fee for new construction to pay for Complete Streets). (2014) City of Anacortes should apply for a WSDOT “Complete Streets” grant (program is operational now). (2015) Start a communications campaign to increase public awareness of transportation pollution issues as well as methods to reduce fuel consumption and emissions. (2015) Expand <i>active transportation</i> infrastructure (i.e., pedestrian and biking amenities). (2015) Establish a city policy of replacing old vehicles with high-efficiency models. (2016) Request that Skagit Transit improve Fidalgo Island transit service (i.e., electric shuttles, convenient schedules, improved customer service, etc.). (2017) Expand the city’s Auto Magic program by offering an annual \$10,000 prize. (2018) Implement CEHA recommendations for improving transportation pollution. 	<ul style="list-style-type: none"> (2020) Revise City regulations to encourage efficient transportation options (e.g., pedicabs, tuk tuks, seasonal solar water taxi, etc.) (2020) Partner with Mount Vernon and other regional partners, secure funding, and construct the paved <i>Skagit Valley Trail</i>. (2020) Support bicycle tourism by developing complementary sustainable tourism activities. Continue educating citizens about transportation pollution issues as well as methods to reduce fuel consumption and emissions. Continue developing <i>active transportation</i> infrastructure (i.e., pedestrian and biking amenities) Install new charging stations for electric vehicles (e.g., at the Washington State Ferry Terminal). 	<ul style="list-style-type: none"> City of Anacortes has a higher-than-average proportion of Complete Streets and active transportation infrastructure compared to cities its size. The League of American Bicyclists recognizes the City of Anacortes as a <i>Platinum Bicycle Friendly Community</i>. Citizens are knowledgeable about transportation pollution issues as well as methods to reduce fuel consumption and emissions. Anacortes has enough charging stations to meet citizens’ and visitors’ demands. The city’s entire fleet consists of electric and plug-in hybrid vehicles. Skagit Transit, or another agency, provides Fidalgo Island with convenient, affordable, low-carbon transportation. Bicycle tourism injects well over \$506 million annually into the regional economy. 	<ul style="list-style-type: none"> Policymakers: City, County, State Nonprofits and Public Agencies Research and Education Stakeholders Industry Investors Anacortes Residents Other relevant stakeholders

BACKGROUND INFORMATION: ENERGY & CLIMATE

Vision 2030 has been framed as a response to the major challenges facing us: climate, energy, and economic upheaval. There are few who would question that we are in turbulent economic times, but when we turn to the topics of energy and climate, we step into more confusing, even contentious, territory. For instance, this document was written against a rising drumbeat of energy euphoria. To hear the U.S. media and others tell it, our country is so awash with oil we'll soon be the next Saudi Arabia. And the "climate problem"? There are those who'd like you to believe global warming is a scam cooked up by scientists conspiring to control our lives. Bullish energy optimism as well as suspicion and denial about climate change are making it difficult for people to get at the truth and chart a prudent course.

This section aims to take an unflinching look at both the energy and climate situation. In the next few pages we'll try to separate the reality from the hype and the "hoax."

Energy

Pick up a newspaper or magazine today and you're likely to find some reference as to how the U.S. is entering a golden era of energy independence. Thanks to new technologies to extract crude from hard-to-reach sources such as the Alberta tar sands and North Dakota shale, starry-eyed policymakers are discussing whether to lift a decades-old ban on U.S. oil exports. Our ship has come in.

But don't hop aboard just yet. Consider the following:

- **The abundant, cheap, easy-to-extract (conventional) oil is steadily depleting.** According to the International Energy Agency's 2010 *World Energy Outlook*, conventional global oil extraction peaked¹⁴⁰ in 2006 (U.S. production of conventional crude peaked in 1970 and has been declining ever since). We're now looking to unconventional energy sources (i.e. tar sands, shale oil) to fill the gap left by the depletion of conventional oil. Can they? For now, yes (thanks partly to decreased oil demand), but there's much skepticism as to how long this "boom" can last. Richard Miller, a former British Petroleum geochemist turned independent oil consultant, notes that data from the U.S. Energy Information Agency, the International Energy Agency, the International Monetary Fund and others leave no doubt that the relatively accessible and inexpensive conventional oil is depleting quickly. "The oil shills, the tech geeks and most, but not all, oil companies would have you believe that non-conventional energy will fill the gap as the cheap, easy-to-pump oil heads gently into the

¹⁴⁰ To say that oil has "peaked" is *not* to say that oil is running out, but that oil production has reached a maximum rate and now is in irreversible decline. As with any nonrenewable resource, depletion is inevitable at some point. The world still has large reserves of oil but these are of the unconventional, "tough" variety (tough to reach and refine).

night. It might, but at what price and cost to the environment? Or it might not at any price.... Gushing U.S. shale oil doesn't mean oil is about to become cheap and plentiful. The falloff in conventional oil production is real, and scary."¹⁴¹

- **The long-term sustainability of the unconventional oil boom is suspect.** Like conventional oil, shale oil also reaches a maximum production point and then goes into decline. After a large flush of initial production, shale oil fields have high decline rates and need continued high rates of drilling to maintain production levels. In order to keep production levels consistent, energy companies must keep adding new wells, which can cost from five million to ten million dollars each. The Energy Watch Group sees a high probability that U.S. shale oil production will peak between 2015 and 2017, followed by a steep decline.¹⁴² And although the International Energy Agency expects U.S. shale output to reduce the world's dependence on Middle Eastern oil in the near term, it predicts shale oil production to peak in 2020 and decline thereafter.¹⁴³ Data from independent research on about 65,000 U.S. oil and gas wells from 31 shale plays predicts a peak and decline in production well before 2020.¹⁴⁴ Even Shell CEO Peter Voser, commenting in August 2013 after his company announced a \$2.1 billion write-down due mostly to poor hydraulic fracturing results, said the shale revolution has been "a little bit overhyped."¹⁴⁵
- **Unconventional oil is more expensive to extract.** It's not just about the quantity or sustainability of the oil reserves, it's also about the rate at which companies can actually extract those reserves and refine them into usable oil, and the dollars it takes to do that. It's costly to get oil from remote locations such as ultra-deep ocean waters, tar sands, or shale rock. The energy that's available after the energy invested to extract and refine oil is called the EROEI (Energy Return On Energy Invested), and it's this net energy/profit that determines the viability of the energy source. With unconventional oil, the EROEI shrinks dramatically. According to Dr. Tim Morgan, former head of global research at Tullett Prebon, "The critical relationship between energy production and the energy cost of extraction is now deteriorating so rapidly that the economy as we have known it for more than two centuries is beginning to unravel."¹⁴⁶ Research indicates that "while there is no

¹⁴¹ <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/inexpensive-oil-vanishing-at-alarms-rate/article15966497/>

¹⁴² *Fossil and Nuclear Fuels –the Supply Outlook*. March 2013, Energy Watch Group. The EWG is a non-partisan international network of scientists and parliamentarians whose work is independent of economic special interests. Its efforts are directed toward politics, business and industry, and the public. EWG scientists undertake studies about the actual worldwide availability of fossil and nuclear energy resources and the possibilities for development of renewable sources of energy.

http://www.energywatchgroup.org/fileadmin/global/pdf/EWG-update2013_short_18_03_2013.pdf

¹⁴³ *World Energy Outlook*, Nov. 2013, International Energy Agency

¹⁴⁴ *Drill, Baby, Drill: Can Unconventional Fuels Usher in a New Era of Energy Abundance?* Feb 2013 report from the Post Carbon Institute. <http://www.postcarbon.org/reports/DBD-report-FINAL.pdf>.

¹⁴⁵ <http://www.smartplanet.com/blog/the-take/trouble-in-fracking-paradise>

¹⁴⁶ From the June 2013 report *Perfect Storm: Energy, Finance and the End of Growth* by Dr. Tim Morgan. http://www.tullettprebon.com/documents/strategyinsights/tpsi_009_perfect_storm_009.pdf

question that there is a very large quantity of oil in the ground it is unlikely that the majority of it can be extracted at a significant energy and hence financial profit.”¹⁴⁷

- **Unconventional oil extraction is harder on the environment and will require more regulation, further increasing costs.** The high decline rate for shale oil wells makes it necessary to drill more, which is not only economically but environmentally costly. If just 6-7% of well casings end up being faulty, thousands of wells will leak methane and toxic chemicals into the water and air.¹⁴⁸ Environmental impacts from hydrofracturing (fracking) have already caused citizens to protest and to rightfully demand moratoriums and more regulation. The same thing is beginning to happen as concern rises over the transport of unconventional oil by rail.¹⁴⁹ Also, as worries grow about climate disruption, citizens are likely to demand more action from their government. Energy companies will increasingly be held accountable for externalizing the costs of energy production to society.¹⁵⁰
- **Declining oil demand will discourage investment in oil production.** Energy optimists assume that oil demand will keep rising (climate realists fervently hope not) and that rise in demand will prompt investors to fund the technologies required to keep pace. But as the effects of climate disruption accelerate, more limits of one sort or another are likely to be imposed on oil consumption, suppressing demand and discouraging investment. This is already happening in the U.S., where mandated increases in vehicle fuel-efficiency standards should significantly reduce oil consumption. Other efforts to decrease demand, as well as declining demand due to economic contraction, will provide less incentive for investors to finance costly new energy production.

Energy has been described as supporting “the entire scaffolding of civilization.”¹⁵¹ Virtually every aspect of modern society – from manufacturing, construction, and the military, to heating, lighting, and communicating – requires cheap, abundant energy. Our global transport system depends almost

¹⁴⁷ “Are we entering the second half of the age of oil? Some empirical constraints on optimists’ predictions of an oil rich future” presented by Charles Hall, College of Environmental Science and Forestry, State University of New York. Abstract at <https://gsa.confex.com/gsa/2013AM/webprogram/Paper230328.html> See also “The implications of the declining energy return on investment of oil production” by Professor David J. Murphy, Northern Illinois University, an expert in the role of energy in economic growth. 2013 paper published by the Royal Society. <http://rsta.royalsocietypublishing.org/content/372/2006/20130126>. Murphy concludes that “as the EROEI of the average barrel of oil declines, long-term economic growth will become harder to achieve and come at an increasingly higher financial, energetic and environmental cost.”

¹⁴⁸ “Fluid Migration Mechanisms Due to Faulty Well Design and/or Construction: An Overview and Recent Experiences in the Pennsylvania Marcellus Play,” p. 8. Oct. 2012 report by Anthony R. Ingraffea, PH.D, P.E.

¹⁴⁹ The Oil Transportation Safety Act (HB 2347) was proposed to the Washington State Legislature in Jan. 2014. See also “Why exploding trains are the new Keystone XL,” http://grist.org/climate-energy/why-exploding-trains-are-the-new-keystone-xl/?utm_source=newsletter&utm_medium=email&utm_term=Weekly%2520Jan%252021&utm_campaign=weekly

¹⁵⁰ See an assessment of these externalized energy costs in “The Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use,” a National Research Council report commissioned by Congress in 2009.

¹⁵¹ *Energy: Overdevelopment and the Delusion of Endless Growth*. Post Carbon Institute

entirely on oil, as does our industrialized food system, which uses approximately seven calories of fossil fuel energy to produce just one calorie of food energy.

In order to make wise choices about our energy future, we should make every effort to increase the energy literacy of policymakers and the general public, both of which too often focus only on the skewed information put out by industry. (Energy density, EROEI, and externalized costs are all critical to evaluating different energy sources.) It's a human tendency to believe optimistic tales designed to further the status quo, but we cannot afford either fairy tales or a lack of the knowledge, courage and imagination needed to build a sustainable energy future.

New technologies have allowed once inaccessible gas and oil reserves to reverse the long-standing decline of U.S. oil and gas production, and have given us some breathing room. Nevertheless, the projections that these technologies can provide endless growth and propel the U.S. toward becoming a net exporter of energy are misleading. The reality is that the abundant, cheap, easy-to-extract oil that undergirds modern society cannot be replaced sustainably and in the long-term by unconventional fossil fuels.¹⁵² As noted by the Chairman of the Department of Petroleum and Geosystems Engineering at the University of Texas at Austin, "We are beginning to live in a different world where getting more oil takes more energy, more effort and will be more expensive."¹⁵³

If the age of "easy" oil is over, is renewable energy the answer? For one thing, wind and solar produce electricity and thus have little bearing on our oil problem. For another, the infrastructure (raw materials, manufacturing) to support renewable energy is still very dependent on fossil fuel energy. We would be wise to focus much of our fossil fuel use on supporting that infrastructure, and to promote the shift from centralized non-renewable electricity overseen by distant corporations to decentralized renewable electricity produced by communities.

If unconventional energy offers only a temporary reprieve, and renewable energy is only part of the answer, what else can be done? One answer lies in revising our idea of "progress" and rejecting the growth-at-any-cost paradigm. Isn't it time that we reduce our overall demand for energy until it can be supported by levels of power that don't devastate the planet?

If all of the above doesn't make the case that we need to exit the fossil-fuel train, consider this: even if we still had abundant, easily-accessed fuel, we'd burn it at our peril.

Why? Read on.

¹⁵² For an excellent review of our energy situation, read Kurt Cobb's "7 things everyone knows about energy that just ain't so (2013 edition)" at <http://resourceinsights.blogspot.jp/2013/12/7-things-everyone-knows-about-energy.html>

¹⁵³ "Dream of U.S. Oil Independence Slams Against Shale Costs." <http://www.bloomberg.com/news/2014-02-27/dream-of-u-s-oil-independence-slams-against-shale-costs.html>

Climate

Ours is a time unlike any other in human history. We are on the threshold of destroying the conditions that have made it possible for humans to survive, and thrive, on Earth.

The climate of the last 10,000 years is the one our civilization is based on. In the very distant past, earth's climate has swung drastically and often abruptly from swamp to ice age and back again. But over the last 10,000 years, the climate has remained remarkably stable: not too warm and not too cold. We've had a "just right" climate that has allowed humanity to thrive.

And then along came the Industrial Revolution, which brought us the great gift of fossil-fuel energy – but at great cost. By dumping into the atmosphere huge amounts of carbon dioxide (CO²) from burning coal, oil and gas, we've increased the greenhouse-gas layer that surrounds our planet, like replacing a thin blanket with a thick quilt.

That extra "padding" has driven the current amount of atmospheric CO² to the highest level in at least 800,000 yrs.¹⁵⁴ As a result, global temperature has increased 0.8°C (1.4°F), which may not sound like a lot, but it has been enough to raise sea levels, shrink glaciers, cause a dramatic melt of Arctic sea-ice, acidify oceans, and create record droughts, floods, storms, and wildfires, all of which are projected to worsen in coming decades, even if we stop emissions today.¹⁵⁵

We've entered the age of consequences. Climate disruption affects our ability to grow food, keep our homes and families safe from extreme weather, build a stable economy, and plan for the future.

Fidalgo and Guemes are not immune to these consequences – we are islands only in a geographic sense. The boundaries dissolve when we consider how a warming world will drop impacts squarely on our doorsteps. For instance, we are already suffering the effects of ocean acidification, a "souring" of waters caused by the ocean's massive uptake of atmospheric carbon. The local impact of acidification is that it destroys the ability of marine animals to grow shells, severely harming our shellfish industries.¹⁵⁶

All of the world's National Academies – the supreme courts of science – warn that human-induced climate change is one of the biggest threats facing our world. Most scientists predict that going

¹⁵⁴ 800,000 years is how far back scientists have been able to measure CO² directly in bubbles of ancient air trapped in Antarctic ice cores. The pre-industrial CO² amount was 280 parts per million (ppm). Humans, by burning coal, oil and gas, have increased this level to 390 ppm in 2010, and the level hit 400 ppm in 2013.

¹⁵⁵ There is an estimated 40-year climate time lag, or the time between the cause (increased greenhouse gas emissions) and the effect (increased temperatures). With 40 years between cause and effect, the average temperatures of the 2000s are a result of the carbon dumped into the air in the 1960s. The full impact of our emissions in the 2000s will not be felt until the 2040s.

¹⁵⁶ Another example of climate impacts hitting home is that weakening winds could threaten the PNW's mountain water supply. A paper recently published in the journal *Science* hypothesizes that climate change is behind a steady, 60-year slowdown of the westerly winds blowing off the North Pacific. The winds play a key role in carrying precipitation into the Cascade and northern Rocky mountain ranges. <http://www.eenews.net/stories/1059991114> For more impacts see, *Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities*. Op.cit.

beyond a 2°C (3.6°F) temperature rise will cause catastrophic, irreversible climate impacts.¹⁵⁷ So it is unsettling to consider that we are currently on a trajectory that will push global temperatures up 4°C (7.2°F) or more by the end of the century or even sooner.¹⁵⁸ (The recently ballyhooed global warming "pause" is, unfortunately, not happening.¹⁵⁹)

Those who have done the math calculate that at least two-thirds of the world's current reserves of oil, coal and gas must remain untapped to keep the average global temperature from rising more than 2°C above its pre-industrial level. Going beyond that internationally agreed-upon limit would have dangerous impacts on sea level, weather, agriculture, and biodiversity. To avoid that scenario, we need to achieve a 10% reduction in CO² emissions per year, starting now. This is a drop so significant that it can be achieved only through dramatic reductions in energy use.¹⁶⁰

Like cheap oil, climate stability is no longer our reality. Instead, our task now must be to "adapt to that which we can't prevent, and prevent that to which we can't adapt."¹⁶¹ All of us who understand what climate destabilization means for our world should do whatever we can to inform the public debate,¹⁶² re-double efforts to reduce emissions, and help our communities to build resilience.

Conclusion

Yes, the challenges before us are immense. Cheap, conventional oil is largely gone. Climate stability is gone. The rising costs of both these realities will radically change our world.

¹⁵⁷ Some scientists and economists warn that a global goal to limit global warming to no more than 2°C risks "wrecking the planet." http://www.scientificamerican.com/article.cfm?id=dangerous-climate-change-imminent&WT.mc_id=SA_DD_20131204

¹⁵⁸ "Even with the current mitigation commitments and pledges fully implemented, there is roughly a 20 percent likelihood of exceeding 4°C by 2100. If they are not met, a warming of 4°C could occur as early as the 2060s." *Turn Down the Heat*. A report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics, November 2012.

¹⁵⁹ The global warming "pause" is due not to any actual slowdown but to cherry-picked data that relies on starting with a very hot year (1998) and then examining a relatively short time period to suggest a slowdown. A paper from the Scripps Institution of Oceanography argues that the so-called pause can be explained by variations in the El Niño-La Niña cycle in the tropical Pacific. In 1998, surface water of the tropical Pacific was unusually warm, and so absorbed less heat which caused the atmosphere to heat up more. <http://news.nationalgeographic.com/news/2013/09/130925-global-warming-pause-climate-change-science-ipcc/#>

See also: http://www.climatecoded.org/2014/02/no-warming-pause-says-world-world.html?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+ClimateCodeRed+%28climate+code+red%29

¹⁶⁰ Analysis by Kevin Anderson, Deputy Director of the UK Tyndall Centre and an expert on greenhouse-gas emissions trajectories. <http://transitionculture.org/2012/11/02/an-interview-with-kevin-anderson-rapid-and-deep-emissions-reductions-may-not-be-easy-but-4c-to-6c-will-be-much-worse/>

¹⁶¹ Author and climate activist Bill McKibben

¹⁶² There are many credible sources of information on climate change, and one great place to start is at *Skeptical Science* <<http://skepticalscience.com>>. Click on the tab that says "Arguments" (<http://www.skepticalscience.com/argument.php>) for easy-to-grasp scientific responses to all the main talking points.

Responding to these challenges will require us to cut fossil-fuel use dramatically and ramp up community resilience. The good news is that efforts to do just that are happening right now on Fidalgo and Guemes through sustainable food projects such as the community gardens, Farmers' Market, a staple foods farm, gardening and food preservation classes. We now have a community-owned solar system; skillshare workshops and fix-it days; efforts to encourage more walking and biking; and the start of a sharing economy through the local time bank. But much more needs to be done, and that's what this document is for, to inspire thinking focused on new opportunities.

Transition Fidalgo & Friends has a positive vision of a powered-down future. We recognize that climate and energy upheaval require urgent action, that it is wise to plan ahead rather than be taken by surprise, and that life with less fossil-fueled energy can be even better than what we know now.

We encourage our community to use courage and imagination as stepping stones to the future. Humans have used enormous amounts of creativity ascending the energy slope all the way to the moon, and there is no reason why we can't draw on those same creative powers on our way back down.

That is just what people everywhere are doing, because they realize everything is at stake. As Dr. David Korten, co-founder of the Positive Futures Network, writes: *"Everything is going to change. The question is whether we let the changes play out in increasingly destructive ways or embrace the deepening crisis as our time of opportunity...It is the greatest creative challenge the species has ever faced."*

Transition Fidalgo & Friends

RECOMMENDED READING

Climate Change: Evidence, Impacts and Choices. National Research Council of the National Academies. Summarizes the current state of knowledge about climate change; explains some impacts expected in this century and beyond; examines how science can help us manage and reduce the climate-change risks. <https://nas-sites.org/americasclimatechoices/more-resources-on-climate-change/climate-change-lines-of-evidence-booklet/>

Climate Change in the Northwest: Implications for Our Landscapes, Waters, and Communities. Edited by Amy K. Snover, Philip W. Mote, Meghan M. Dalton. 2013 report assesses the state of knowledge about key climate impacts and consequences to various Pacific Northwest areas. <http://ces.washington.edu/db/pdf/daltonetal678.pdf>

Drill, Baby, Drill: Can Unconventional Fuels Usher in a New Era of Abundance? David Hughes, Post Carbon Institute. A painstakingly researched look at the prospects for various unconventional fuels to provide energy abundance for the U.S. in the 21st Century. <http://www.postcarbon.org/reports/DBD-report-FINAL.pdf>

IPCC Fifth Assessment Report, Climate Change 2013: The Physical Science Basis. This latest assessment from the Intergovernmental Panel on Climate Change is the source document for many reports. The IPCC was set up in 1988 by the World Meteorological Organization and the U.N. Environment Program to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. <http://www.ipcc.ch/report/ar5/>

Moral Ground: Ethical Action for a Planet in Peril. Kathleen D. Moore and Michael P. Nelson, Eds. Brings together the testimony of over 80 visionaries in a compelling call to honor our moral responsibility to the planet and future generations.

Reinventing Fire: Bold Business Solutions for the New Energy Era. Amory Lovins. Maps a robust path for integrating real, here-and-now, comprehensive energy solutions in four industries (transportation, building, electricity, and manufacturing).

Swinomish Climate Change Initiative Climate Adaptation Action Plan. Swinomish Indian Tribal Community, Swinomish Indian Tribal Community Office of Planning and Community Development. http://www.swinomish.org/climate_change/Docs/SITC_CC_AdaptationActionPlan_complete.pdf

The End of Growth: Adapting to Our New Economic Reality. Richard Heinberg. A comprehensive analysis of the reality of ecological limits as they relate to economic growth and the need for a new economic model.

The Transition Handbook: From Oil Dependency to Local Resilience, and The Transition Companion: Making Your Community More Resilient in Uncertain Times. Rob Hopkins. Focuses on solutions and community-scale responses to climate and energy challenges. Guidebooks for the grassroots.

Turn Down the Heat: Why a Warmer 4°C World Must Be Avoided. A Report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics. Spells out what the world would be like if it warmed by 4°Celsius, which is what scientists are nearly unanimously predicting by the end of the century, without serious policy changes.
http://climatechange.worldbank.org/sites/default/files/Turn_Down_the_heat_Why_a_4_degree_centrigrade_warmer_world_must_be_avoided.pdf

Uncertain Future: Climate Change and Its Effects on Puget Sound. The Climate Impacts Group, University of Washington. Looks at how the Puget Sound region will change in response to global warming. <http://cses.washington.edu/db/pdf/snoveretalpsat461.pdf>

APPENDIX A

COST OF OUR ENERGY FUTURE: A PROJECTION TO 2030

The energy we use daily for transportation, running our homes, powering our devices, is central to our way of life. However, the cost of this energy is likely to increase, and by 2030 a significant part of everyone's budget may go toward paying for that energy. No one can predict with certainty the future price of energy. But by using the past as a guideline, and in combination with studies of future price trends, we can develop reasonable predictions.

This section provides a glimpse at how much energy costs could increase between now and 2030. The data on the projected costs of energy was developed by looking at other studies on the subject and/or trending historical data to estimate costs if the trends continue. Whenever possible, more than one source has been used to provide a range of cost projections.

To put the increasing energy costs in perspective, an evaluation based upon percentage of household budget used to pay for energy has been developed to look at historical percentages and present-day percentages, to serve as a comparison against expected percentages in 2030. Since household income levels have a significant bearing upon what impact energy costs have on the budget, two household income profiles have been developed (lower 50% and top 50%).

Our energy comes in a variety of forms. The vast majority of this energy comes directly from burning fossil fuels or indirectly by burning fossil fuels to create electricity. This report develops cost projections for each of the major sources of energy used to maintain our standard of living. In the case of electricity, a general cost projection is presented along with a specific look at the expected pricing of electricity generated by renewable sources.

Energy Cost Predictions

Gasoline

Gasoline powers the majority of the vehicles used for transportation in this country and around the world. The price and availability of gasoline has a significant impact upon how much we use our cars and how far we travel in them. In the U.S., peak extraction of oil (peak oil) was reached in 1970 (Lester Brown, *Plan B 3.0*) with the rest of the world's oil production predicted to peak in this decade (multiple sources give a wide range of estimates: 2006 to 2030). Evidence of peak oil is the steadily increasing cost of gasoline:

- 1929 - \$.21/gal (avg price; eere.energy.gov/vehiclesandfuels/facts)
- 1989 - \$.90/gal (avg price; eere.energy.gov/vehiclesandfuels/facts)
- 2013 - \$2.80 to \$3.91/gal (avg price; eere.energy.gov/vehiclesandfuels/facts)

This price increase reflects the growing scarcity of new crude oil sources (from which gasoline is refined) and the higher costs to reach the harder-to-extract sources of oil.

By 2030, gasoline is predicted to be significantly more expensive. Using a variety of sources, the cost of gasoline is expected to range from a low of \$8.00/gallon to \$14.50/gallon. The cost of gasoline could be higher, if recent cost increases to produce a barrel of oil (14% annual increase – Bernstein Research¹⁶³) continue.

Gasoline \$/gallon (2030 range)	Source
\$8.00	US DOE EIA ¹⁶⁴ : high case shows a doubling of oil costs by 2030. The cost of gasoline will closely follow the cost of oil.
\$14.50	Extrapolation of US DOE graph of gasoline prices 1929 to 2010

Natural Gas

Natural gas is a fossil fuel that burns cleaner than coal, and is used to heat homes, produce electricity, and occasionally to fuel transportation. Currently, natural gas is very inexpensive (\$2 to \$3/MMBtu) in the U.S. due to recent developments in natural gas production. However, the price is unlikely to remain low in the future.

In other parts of the world, such as Japan, the price paid for natural gas in 2013 has been as high as \$16/MMBtu.¹⁶⁵ This price disparity has spurred an increase in the development of facilities to allow its export, which will increase the price of natural gas domestically. Also, there are early indications that new natural gas sources developed by hydraulic fracturing are not able to sustain production levels (some wells taper off within a year).

By 2030, natural gas will no longer be the low-cost source of energy. Projections indicate that natural gas prices could be as much as nine times more than today's cost in the United States.

Natural Gas - \$/MMBtu (million Btus)	Source
\$10.60 (2020)	World Bank Projection- May 2013 Europe
\$13.90 (2020)	World Bank Projection- May 2013 LNG ¹⁶⁶
\$18.00 (2030)	Extrapolation of natural gas prices 1950-2010

¹⁶³ Bernstein Research is a U.S. financial research company and a subsidiary of investment management firm AllianceBernstein.

¹⁶⁴ The U.S. Energy Information Administration (EIA) is a principal agency of the U.S. Federal Statistical System responsible for collecting, analyzing, and disseminating energy information. EIA programs cover data on coal, petroleum, natural gas, electric, renewable and nuclear energy. The EIA is part of the U.S. Department of Energy.

¹⁶⁵ EIA data found on Wikimedia

¹⁶⁶ Liquefied natural gas. LNG is natural gas that has been compressed and cooled (-260 F) to the point that the gas turns to liquid, and is thus easier to transport. The European price for natural gas vs. the LNG price illustrates the price Europeans pay and what the rest of the world is willing to pay.

Heating Oil

Heating oil is primarily used to heat homes and make hot water. It is also used, infrequently, to produce electricity. As with gasoline, heating oil prices will largely follow the same trends as crude oil prices. In 1990, heating oil prices were in the \$1.20/gallon region.¹⁶⁷ By 2004, the price was averaging \$2.00/gallon. In 2013, the price of heating oil averaged \$4.00/gallon. The upward trend in price per gallon can be seen all the way back to the 1930s. By 2030, heating oil could range from \$9 to \$19/gallon, if prices continue to trend upwards at rate increases similar to recent years.

Heating Oil- \$/gallon (2030 range)	Source
\$9.00	Trend parallels EIA projection of oil price- High
\$19.00	Extrapolation of current price trend

Electricity

Electricity is the energy source used to power homes and businesses throughout the U.S. and most developed countries. Electricity is also expected to play an increasingly important role in transportation in response to the growing costs associated with using fossil fuels. Of all the major energy sources, electricity is expected to increase in cost the least, based upon a study done by the Washington PUD Association (4% annual increase on average) and NREL’s Renewable Electricity Futures Study. The rapidly falling price of renewably-generated electricity, such as wind and solar, increase the probability that electricity will be the low cost energy option in 2030. For example from 1971 to 2013, the cost per watt of solar panel capacity had dropped from \$100/w to \$.50/w, a 200-fold decrease (*Wikipedia –Solar Cells*). Wind power has also enjoyed a rapid decrease in cost to the point where it can produce power for costs similar to fossil fuel-generated electricity. Commercial wind power is expected to decrease by another 30% by 2030.¹⁶⁸ This trend in falling prices for renewable electricity generation is likely to continue into the future and therefore make electrical power even more compelling as the power source of choice.

Electricity - Cents/kw-hr (2030)	Source
18.4	Washington PUD Assn – extrapolation of historical trend
26.0	NREL – Renewable Electricity Futures Study 2012

Energy Cost as a Percentage of Household Income

Family income has not kept pace with rising energy prices in recent years. That will continue to be the case. **Figure 1** shows the average percentage of after-tax household income going to energy use in 2001, 2005, and 2012, with an estimated range of percentages for 2030 using the cost estimates in the prior section. 80% of the growth between 2001 and 2012 is the result of higher gasoline prices. The heavy influence of gas prices is also felt in the 2030 projections.

¹⁶⁷ Pricing data from U.S. Energy Information Administration Weekly No.2 on Heating Oil Residential Prices

¹⁶⁸ *The Past and Future Cost of Wind Energy*, 2012. National Renewable Energy Laboratory (NREL)

Figure 1: Residential Energy Expenditures as a Percentage of After Tax Household Income

2001	2005	2012	2030 Est
6.8%	9.3%	11.4%	15% - 29%

The above data becomes more disturbing when looked at by income level. **Figure 2** below breaks the above data down between the upper and lower 50% of households in terms of after- tax income. This data assumes energy consumption and income distribution patterns in 2030 are the same as in 2012. Relative to income distribution, that is an optimistic assumption given the current trend. In recent years, poverty rates have risen to historic highs, along with the declining long-term trend in inflation-adjusted family incomes.

Figure 2: Energy Expenditures by Income Level

	2012	EIA 2030	Historical Extrapolation 2030
Total	11.4%	14.8%	28.8%
Bottom 50%	20.6%	26.8%	51.9%
Top 50%	8.9%	11.5%	22.5%

The impact of higher energy costs is dramatically greater on lower-income households. Such levels of expenditure will not be sustainable. Clearly consumption will have to be reduced from current levels and more will have to be done to make homes and travel more efficient. However these actions have costs as well, which again will disproportionately impact lower-income households. The community needs to consider how this reality could play out in terms of political unrest, crime, and general quality of life. Policy makers will be challenged to help create a vibrant, sustainable community inclusive of citizens of all income levels.

METHODOLOGY

1. Baseline after-tax household income for 2012 taken from reference #164 above, which in turn was taken from U.S. Bureau of Census, Current Population Survey Supp. 2011 edition.
2. The 2012 Household Income baseline was escalated to 2030 with per capita real income growth factors provided from reference #165.
3. 2012 per household energy consumption derived from data provided in reference #163.
4. 2030 lower range energy prices from high energy price case in reference #163.
5. 2030 higher range energy prices extrapolated from historical data.
6. Energy consumption, expenditures, and income relationships for upper and lower 50% income categories taken from reference #164.
7. 2030 household consumption and distribution by income relationships assumed to be the same as 2012.

SOURCES: Used Percentage of Household Income Analysis

1. “Annual Energy Outlook 2013”; DOE/EIA, April 2013
2. “Energy Cost Impacts on American Families 2001 – 2012”; American Coalition for Clean Coal Electricity, February 2012
3. “2012 Long-Term Economic and Labor Force Forecast”; State of Washington Office of Financial Management, Forecasting Division; February 2012

Conclusions

Although predictions of future energy prices are highly uncertain, historical trends along with trending studies indicate that the cost of all forms of energy have been steadily rising and will continue to climb through 2030 and beyond. For energy sources that are already costly, such as gasoline and diesel, the price to use these sources may become prohibitive for many people. For other energy sources, such as natural gas and electricity, the costs will continue to climb, but should remain affordable. Electricity appears to be the most favorable energy source, because the projected cost increases are the least of any of the major energy sources. Electricity prices are expected to be helped by falling costs for renewably-generated power (solar and wind), which may become the low-cost generating source by 2030.

When the costs for energy are examined as a percentage of household budgets, an alarming trend is exposed. In 2001, the average residential expenditure for energy was 6.8% of after-tax household income. By 2012, energy expenditures were taking 11.4% of after-tax household income. The projections made in this report show that this number may continue to increase to a range of 15% to 29% by 2030 (depending upon how energy price increases actually unfold). The households in the bottom 50% of after-tax income will be the hardest hit by these price increases with a projected 52% (high case) of household budgets going towards energy costs (if current energy-usage trends continue). The cost of energy, which was almost incidental in 2001, will become a major household consideration by 2030.

APPENDIX B: FIVE HIGH-POTENTIAL SUSTAINABLE INDUSTRIES

Clean Energy

The *renewable energy and efficiency* industry is comprised of enterprises involved in

- developing, producing, or distributing energy from renewable sources (e.g., sun, wind, waste, etc.) and
- providing goods or services that save energy.



Skagit Community Solar Project's 18.72kW made-in-Washington array on the Anacortes Middle School.
Credit: Eric Shen

Rationale: Rising oil prices and energy uncertainty are driving market demand for alternative energy sources, and Anacortes has unique assets (e.g., refineries, climate, available industrial land, proximity to agricultural waste for biofuel, etc.) that could confer competitive advantages in this fast-growing industry.

- *Bloomberg New Energy Finance* (4/22/13) reports “strong growth for renewable energy through 2030...The likeliest scenario implies a revenue jump [due to technological advances] of 230%, to \$630 billion per year by 2030.”
- Washington is considered a clean-energy leader, and the state is investing in its large and growing clean energy economy. According to the Governor’s *Working Washington Agenda* (February 2013), clean energy is a high investment priority. “Job creation rates in [the] clean energy economy are well above those for other shrinking sectors...and clean energy jobs pay better... We will also establish a *Clean Energy Fund* to leverage federal, utility and private investment in research, development, demonstration and early deployment of high-value, clean energy technologies.”



“Technology-based industries continue to be at the forefront of development of the WA economy. They account for the largest share of employment, business activity and labor income...”

Technology Alliance, WA

- *Inc. Magazine* (<http://www.inc.com/ss/best-industries-for-starting-a-business>) reports, “[Federal] economic stimulus funds for energy projects nationwide amount to \$43 billion, creating opportunities for entrepreneurs...to break into areas such as biofuel and wind power.”

- *Innovate Washington: Aviation Biofuels Update* reports on the “enormous promise” of an emerging industry that capitalizes on Washington’s “natural strengths and assets in the field of aviation biofuels production.”

(<http://climatesolutions.org/programs/saf/aviation->

[biofuels-update](#)). In a conversation in Spring 2013, Representative Norma Smith suggested to Anacortes resident Jan Woodruff that local refineries might capitalize on Washington’s efforts to establish a clean-aviation-fuel industry.

Business Ideas: Renewable energy production (wind and solar farms on March Point, tidal energy products or services), clean-energy products and services; alternative fuels; aviation/marine biofuel made from agricultural waste; flywheel energy storage; energy conservation products and services (e.g., architectural and engineering services, energy audits, smart-grid technologies, etc.); hospital sustainability consulting (e.g., carbon reduction plans), and more.

Preliminary List of Potential Partners/Collaborators:

- Policymakers: City, County and State.
- Research and education stakeholders: Centralia College’s Pacific Northwest Center of Excellence for Clean Energy; WSU Extension Energy Program; WSU (working on clean-aviation-fuel initiatives); and others.
- Nonprofits and public agencies: Solar Washington; Northwest Sustainable Energy; Innovate Washington; Transition Fidalgo & Friends; RE Sources for Sustainable Communities; and others.
- Industry stakeholders: Farm Power Northwest; Outback Power; Itek Energy; Western Solar; Whidbey Sun & Wind, T. Bailey Inc. (fabricates wind towers); Shell/Tesoro (prospects for aviation biofuels or wind production); and others.



Employees at T. Bailey Inc., Anacortes, which fabricates wind towers. *Credit: Vince Streato*

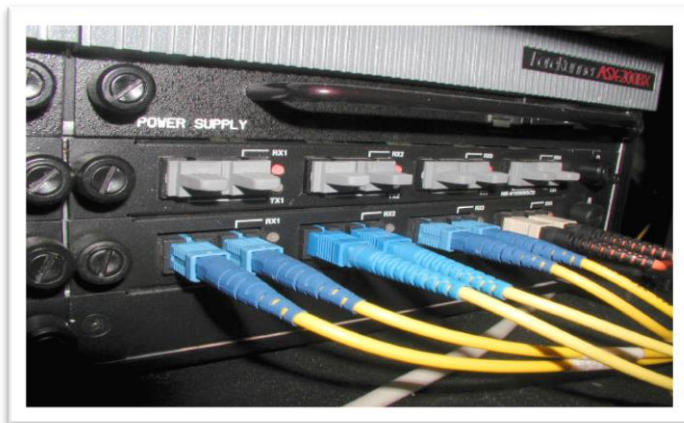
Information Technology & Communications

Enterprises are involved in the design, development, application, implementation, support or management of computers and telecom systems that store, retrieve, transmit or manipulate data.

Rationale: A huge, growing market that is considered to be one of the leading industries of the future. Washington is an industry leader, which could confer advantages for Anacortes.

- According to market analysis firm Gartner, “Worldwide IT spending is projected to total \$3.7 trillion in 2013.” (<http://www.qfinance.com/sector-profiles/information-technology>).
- In the *Best Performing Industries in the Coming Decade*, IBIS World predicted the following:

- Voice Over Internet Protocol Providers (VoIP) will grow 150% [Note: this sector has increased 16.7% annually, and it generates \$15 billion annually];
- E-Commerce and Online Auctions will grow 125% [Note: this sector outperforms most retail sectors, and will grow as consumers become accustomed to buying online and internet payment options continue to improve security.]
- According to the Washington Economic Development Commission's *Driving Washington's Prosperity* (<http://www.wedc.wa.gov/Download%20files/2013StrategicPlan.pdf>), our ITC sector reached a new peak in 2011, with 124,440 workers, which "placed Washington as the eighth largest state for ITC employment.... Between 2010 and 2011 the average ITC wage in Washington increased by \$7,347, the largest absolute increase in the U.S.... In 2011, the software industry paid an average annual wage more than 3.3 times the state average.... Washington is among the *top three states leading the push* for an innovation based economy"
- The Washington Research Council reported the IT sector has accounted for nearly two-thirds of the state's job growth since 1990. "Washington's vibrant tech cluster has had a strong, positive effect on the state economy.... The tech industry mitigated the effects of the national recession here, showing relatively stable income and employment patterns, even during the sharpest economic downturn in more than half a century."
- The Technology Alliance named Washington as one of twelve top contenders in the innovative economy. "Washington ranks high among peers and the nation in research capacity, measured as expenditures on R&D activities by various performers. Washington companies and institutions performed a total of more than \$16.4 billion in R&D in 2010, the most recent year for which data are available." (http://www.technology-alliance.com/documents/Benchmarking_2013%20brochure_hires.pdf)



The fiber optics industry will experience growth as consumers and businesses demand faster internet connections. *Credit: rollingroscoe*

Business Ideas: VoIP providers; E-commerce & online auctions; software engineering; computer systems design, development and analysis; web development and maintenance; telecommunications equipment and services; applications development; healthcare technology for patient monitoring and communication (especially for management of chronic disease in aging populations); data processing (i.e., modeling, analysis, etc.); games development; technical writing; multimedia programming; network administration; etc..

Preliminary List of Potential Partners/Collaborators:

- Policymakers: City, County and State.
- Nonprofits and public agencies: Information Technology Coalition; Center of Excellence for Information and Computing Technology; and others.

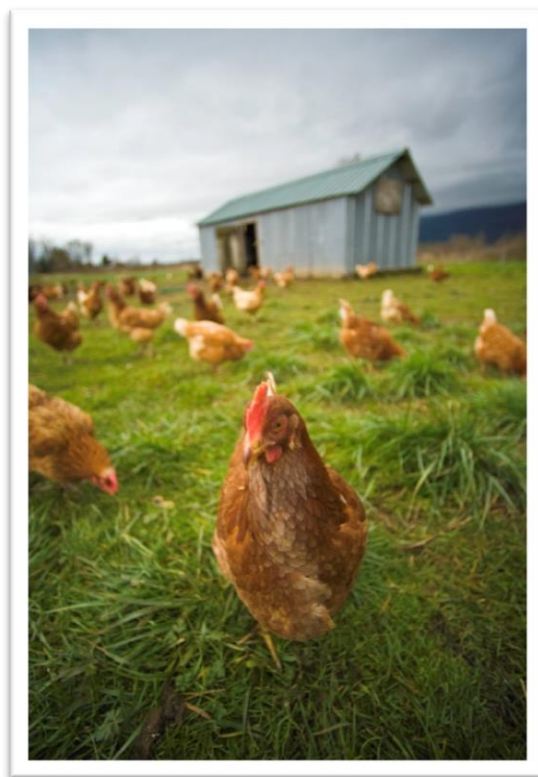
- Research and education stakeholders: WSU Information Technology; UW Information Technology; Technology Alliance; Bellevue College Center of Excellence for Information and Computing Technology; and others.
- Industry stakeholders: Washington Technology Industry Association; Information Technology Coalition; Integra; and others.

Sustainable-Agriculture Specialties

Sustainable agriculture (i.e., food, fiber, and forage) has three goals: a healthy environment, profitability, and socio-economic equity.

Rationale: Agriculture is a cornerstone (i.e., 13%) of the Washington economy (<http://agr.wa.gov/AgInWa/>). Consumer demand for affordable, healthy food outstrips the supply. The demand for “local food” is greatest in urban areas, and Anacortes is centrally located between Seattle and Vancouver, B.C.

- Nationally, organic produce generated \$30 billion in sales in 2011. Sales in this fast-growing industry increased 400% in 10 years.
- Washington boasts the second-highest volume of organic produce sales nationally (i.e., \$284 million in 2011).
- Washington was the third largest exporter of food and agricultural products in the U.S. in 2011 (Source: Washington State Department of Agriculture).
- Agriculture is the largest Skagit County industry, and organic production in Skagit County is the highest in Western Washington. “...between 2005 and 2007, the organic producer sector grew 89% and the organic processor sector grew 59%.” (WSU Extension, <http://agr.wa.gov/fof/docs/Organics-LocalFoods.pdf>).



Credit: Vince Streano

- The Washington *Future of Farming Strategic Plan* singled out the certified organic farming sector and the sustainable and local farming movement as “important special sectors.”



“Almost daily, newspapers contain articles about sourcing or cooking ‘sustainably grown’ local foods...”

Washington State,
Future of Farming Strategic Plan



- Due to public pressure, food retailers are increasingly demanding certifications on sustainability (i.e., food safety, social, environmental and labor) issues.

Business Ideas: Organic farms, orchards, vineyards and ranches; soil amendments; compost production, or large-scale vermiculture for the food industry; organic food

processing; value-added products (Note: Because of the child-obesity epidemic, there is increasing public pressure for healthy food for kids. Organic beverages, snacks, and vending machines are considered a future top sustainable business.); medicinal herbs; organic marijuana (growers, producers and tourism); home-gardening products/services, including edible landscaping, fruit and nut production, and rain-water catchment; organic seeds and nursery products; a year-round Anacortes Farmers' Market; agricultural/garden structures and equipment; community supported agricultural (CSA) enterprises; *locavore*/organic food retail (e.g., restaurants); and more.

Preliminary List of Potential Partners/Collaborators:

- Policymakers: City, County and State.
- Research and education stakeholders: WSU Skagit County Extension (*Cultivating Success*, a small farms course); Viva Farms (a farm incubator); SVCC's *Environmental Sustainable Agriculture Program*; Greenbank Farm's *Ag Training Program* (Whidbey Island); Walla Walla Community College's Agricultural Center of Excellence; and more.
- Nonprofits and public agencies: Washington Department of Agriculture; Washington Liquor Control Commission; WA Fruit Society; Puget Sound AVA; Anacortes Farmers' Market; Island Hospital's Cascade Harvest Coalition; Tilth Producers; Washington Sustainable Food and Farming Network; Heart of Washington; Puget Sound Fresh; Skagitonians to Preserve Farmland; Transition Fidalgo & Friends Eat Your Yard program; Island Hospital; and others.
- Industry stakeholders: Specialty growers (for locavore/organic markets), processors and labor; A-Town Bistro; Cedar Mountain Herbs; and others.
- Consumers and retailers: Organic/sustainable restaurants; Haggen and The Market; Skagit Valley Food Co-op (and a future Anacortes Co-op); institutional wholesalers (for schools, hospitals, etc.); and others.



Island Hospital participates in a Farm-to-Healthcare Initiative that includes a seasonal weekly farm stand and a community-supported agriculture program.
Credit: Vince Streato

Sustainable Tourism



Credit: Vince Streato

Businesses that provide visitor experiences in a manner that protects the social, economic and natural environments.

Rationale: Tourism is big business in Washington, and one in which Anacortes has multiple competitive advantages.

- According to the Washington *Preliminary 2012 Travel Impacts Report*, tourism generated "...total direct visitor spending of \$16.9 billion and...\$1 billion

in state and local tax revenue..." Tourism in Anacortes contributed 12% of taxable retail sales (TRS) revenue.

- Tourism is a key economic driver in San Juan County. In 2009, visitors "spent \$116.5 million on lodging, dining, groceries, retail shops, art galleries, museums, whale watching tours, kayaking treks, bicycle rentals, farmers' markets, etc." Lodging sales of \$25 million generated \$1,032,932 in lodging tax for the county. (San Juan Island Visitor Bureau's *2012 Semi-Annual Report*).
 - The first two bullet points suggest that a collaborative regional (e.g., *Sustainable Salish Sea Islands*) tourism strategy could grow market share for all partners. Equally important, local residents will benefit from the infrastructure and recreation improvements required to develop this market niche.
- Walking and bicycling—both sustainable tourism activities—are among the most popular recreation activities in the U.S. Pursuing profitable businesses based on walking and biking will require investments in walking and biking infrastructure.
- Anacortes has many unique assets that could confer competitive advantages in the sustainable tourism market:
 - Location: (1) a convenient distance between two large metropolitan markets accessible by Amtrak Cascades; (2) on the Salish Sea, a unique and valuable ecosystem offering multiple marine tourism opportunities; (3) in Skagit County, which enables us to offer agritourism; (4) near popular visitor attractions (e.g., Deception Pass State Park, which attracts 2M visitors annually; San Juan Islands; Whidbey Island); and (5) birds and other wildlife.
 - A Washington State Ferry Terminal, which brings 1.8 million people annually through Anacortes.



"Across the country, cycling contributes \$81 billion to the economy, according to a national outdoor recreation study. Recreational bicycle travel accounts for \$400 million of Oregon's annual \$9 billion tourism industry..."

The Oregonian (5/8/2013)



- Sailboat registrations in our region are four times higher than in the U.S., and Anacortes is where the 2010 America's Cup winner, BMW Oracle's *BOR90*, was built.
- Outdoor recreation amenities: beaches, marinas, forest lands, hiking trails, Mt. Erie, Washington Park, stunning scenery, and the Anacortes Farmers' Market.

Shipping is one of the dirtiest industries on the planet. It accounts for approximately 3.3% of the world's carbon dioxide. If it were a country, it would be the sixth-largest emitter.

Ellycia Harrould-Kolieb, Oceana International Maritime Organization

Business Ideas: A mixed-use LEED-Platinum waterfront conference center (with eco-hotel, retail, and condominiums), seasonal solar water taxi; pedicabs; agritourism (e.g., culinary and winery tours, farm stays, etc.); boating (e.g., Salish Sea Island sailing tours, electric-sailboat charters; kayaking, whale watching, etc.); bicycling (events, tours and pedicabs); adventure travel (e.g., zip line, rock climbing, windsurfing, diving, etc.); voluntourism (e.g., helping WWU's Shannon Point with water sampling; marine biology research at Rosario; beach cleanups, etc.); tribal ecology and

cultural experiences; hiking outfitters and tours; and more.

Preliminary List of Potential Partners/Collaborators:

- Policymakers: City, County and State.
- Research and education stakeholders: Shannon Point Marine Center; WWU; WSU; WSU Beach Watchers; and others.
- Nonprofits and public agencies: Pure Travel Collaborative; Feet First; WA Tourism Alliance; Skagit Tourism Bureau; San Juan Islands Visitor Bureau; WA State Destination Marketing Organizations Association; Puget Sound Fresh; WA Department of Fish & Wildlife; WDE's Puget Sound Corps; Bicycle Alliance of WA; Anacortes Chamber of Commerce, Coast Salish Tribes; The Wilderness Society (North Cascades Initiative); Audubon Washington (Great WA State Birding Trail); Padilla Bay Reserve; Skagit Land Trust; San Juan Preservation Trust; North Cascades Institute; and others.
- Industry stakeholders: lodging, food service, recreation, transportation and retail; MJB Properties; and others.



Bicycle tourism is a multi-million dollar industry in many states. *Credit: earl53.*

Green Marine

Businesses contributing to the protection of marine and coastal ecosystems by developing, manufacturing, distributing, outfitting, offloading, servicing, operating, or mooring eco-friendly commercial/recreational watercraft.

Rationale:

- Estimates are that 80% to 90% of global cargo is transported by ships. High fuel prices have made sustainability a burgeoning issue as well as a young, growing market niche.
- Sustainability developments in shipping include a variety of new materials and technologies: Alternative hull materials that reduce maintenance and fuel consumption; energy-efficient engines; renewable and alternative fuels/engines (e.g., harvesting wave, tidal and wind energy at sea); technology that converts kinetic energy into electricity; pollution control technology; electrical propulsion; solar ships, ferries and boats; port-to-rail links that reduce emissions from road transport; ship-to-shore electric power; electric-powered cranes; marine paints that prevent the transfer of invasive species, and much more.
- Annual economic impact of recreational boating in the North Sound is \$381 million (i.e., 12% of the \$3.2 billion industry in Washington State). *Boat Services*, the largest sector in the region's recreational-boating industry, accounts for 82% of all sales and 39% of all recreational-boating jobs (i.e., 1,565 jobs). (Source: National Marine Manufacturers Association).
- Although a small niche, sailboat ownership is four times higher in our region than it is in the U.S. (i.e., 8.3% of recreational boats in our region are sailboats, compared to 2.1% in the U.S.)
- An intriguing marine niche is the sustainable recreational boating industry (i.e., wind, solar, and human-powered watercraft, energy-efficient motors, etc.). Given our advantageous location in the Salish Sea, positive maritime reputation, marine industry infrastructure, and skilled marine labor force, developing a green-marine brand is a logical extension of our economic portfolio.
- The NW Center of Excellence for Marine Manufacturing and Technology (Skagit Valley College) already offers liaisons to business, industry, labor and education to support development of a green-marine economy in Anacortes.

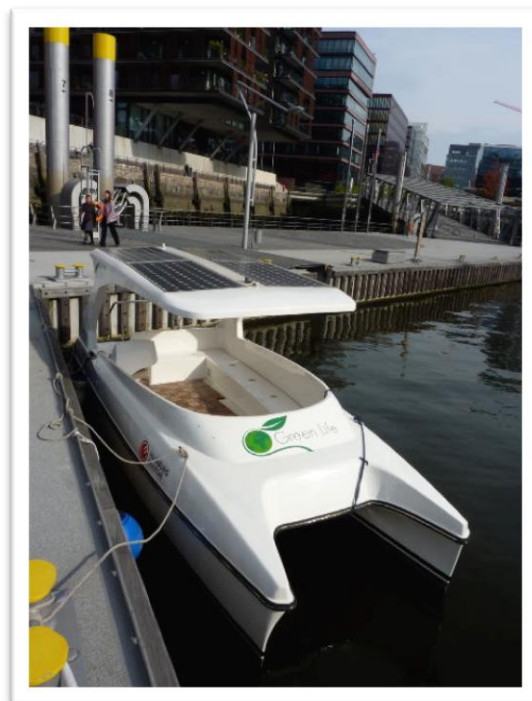


Dakota Creek is building a state-of-the art environmentally friendly fishing vessel for line-caught cod. The design keeps weight low, making the ship 30% more fuel efficient. Credit: Blue North.

Business Ideas: To maintain a vibrant economy while protecting marine and coastal ecosystems, Anacortes should welcome all environmentally-friendly marine business: state-of-the-art sustainable watercraft design and manufacturing; energy-efficient engines; research and material engineering; renewable and alternative energy R&D; pollution-control technologies; marine equipment; sustainable port technologies; green-marine services, etc.

Preliminary List of Potential Partners/Collaborators:

- Policymakers: Port, City, County, State and Federal.
- Research and education stakeholders: Skagit Valley College's Northwest Center of Excellence for Marine Manufacturing and Technology; and others.
- Nonprofits and Public Agencies: Regulatory agencies; Tribes; Sound Experience (i.e., *Adventuress* Captain Joshua Berger); and others.
- Industry stakeholders: Shipbuilders (e.g., Dakota Creek); boat owners; charter companies; marine engineers and service providers; shipyards; and others.



Formation of the Electric Boat Association in the 1980s spawned a solar watercraft industry. In 2012, the Turanor PlanetSolar, the largest solar-powered yacht ever built, finished circumnavigating the Earth. *Credit: Seemann.*

APPENDIX C: WASHINGTON SMALL BUSINESS INCUBATORS

Applied Process Engineering Laboratory (APEL)	Richland, WA	NA	Technology startups	Engineering and manufacturing space, wet labs, bio labs, and electronic labs. APEL supplies process and hood-off gas connections, compressed air, vacuum, water and power. APEL has air and water discharge, and flammable storage permits. Prototypes or pilot plants can be tested and initial manufacturing conducted using APEL's utilities, services and permits.
Ellensburg Business Incubator	Ellensburg, WA	1989	Startup businesses that need light industrial space and support services	Provides technical assistance (e.g., finance, marketing, business planning, industry research, local, state and federal assistance, regulatory compliance, etc.). Other benefits are access to mentors, lending, and below-market rent. The 8,500 square foot incubator building is at full capacity with five businesses: Iron Horse Brewery, EADS Composite Atlantic Ltd., Central Washington Biodiesel, Ellensburg Distillery and Northwest Delivery Systems. Since 1994, the incubator has been operated by the Ellensburg Business Development Authority.
Kenmore Business Incubator	Kenmore, WA	2013	Technology, life sciences/natural health, and other startup companies	A two-year pilot project. Provides low-cost office space (3,000 square feet), mentorship and business development support. Offers business operations assistance. Connects business professionals to networking events, workshops and seminars. Business cluster aligns with Bastyr University (natural health education and research; the City's largest employer) as well as proximity to the UW Bothell campus and major technology companies.
Thurston County Small Business Incubator	Olympia, WA	NA	Companies that fit the mission: "strengthening the local economy through its growth and employment"	Offers a dozen offices, two conference rooms, a kitchen and work center, and a wide variety of services (e.g., management and administrative support, access to office equipment, high-speed internet, education in accounting, finance, HR, marketing and other business practices, as well as expert consulting services).
Tri-Cities Enterprise Center	Richland, WA	NA	Tourism and other new or expanding businesses	Assistance includes funding programs and financial assistance, general management, business planning, feasibility analysis, coaching and skills development, shared equipment and administrative assistance.

UW Center for Commercialization	In the U District	2014	Technology companies in life sciences, clean technology, alternative energy, and information technology	Will initially host 15 technology companies. When complete, will have 11,500 square feet each of lab and office space for 25 startups. Students and faculty will work alongside Washington entrepreneurs on UW “spin outs.”
William Factory Small Business Incubator	Tacoma, WA	1986	Technology startups	Provides support and physical office space for technology startups. WFSBI has graduated over 200 successful companies and currently hosts over 40 tenants. Offers shared and private office space on a monthly basis. Rent includes support services, furnished office suites and state-of-the-art conference rooms.

APPENDIX D

GRANT FUNDING FOR BUSINESS INCUBATORS

In many countries, incubation programs are funded by regional or national governments as part of an overall economic development strategy. In the U.S., however, most incubation programs are independent, community-based and resourced projects. The U.S. Economic Development Administration (EDA) is a frequent source of funds for developing incubation programs, but once a program is open and operational it typically receives no federal funding. Rents and/or client fees account for 59% of incubator revenues, followed by service contracts or grants (18%) and cash operating subsidies (15%).

Copied from: wikipedia; http://en.wikipedia.org/wiki/Business_incubator

Only in rare instances is there a 100% commitment from one [funding] source. In some cases, local funds are committed by the local government in conjunction with community colleges, universities, local economic development agencies, and other ad hoc partnerships. On occasion, these partnerships obtain funds through economic development and capital fundraisers, and in the case of for-profit incubators, from rent revenues or consulting services to firms in business incubation. Incubators thus funded must make an effort to increase revenues to continue in operation. [COMMENT: In Vision 2030, we gave the incubator a placeholder name, "Skagit Sustainable Business Incubator," with the idea that we would secure financial support from Skagit County and SVCC. Perhaps Anacortes could attract funding (or support) from other partners such as WWU (offers sustainability degrees) or WSU.]

Copied from: National Center for Research in Vocational Education, University of California, Berkeley; <http://ncrve.berkeley.edu/abstracts/MDS-727/MDS-727-ESTABLIS.html>

Federal Grant Sources:

- *Federal Economic Development Grants* (U.S. Economic Development Administration, American Recovery and Reinvestment Act): Funding for regional projects that develop business infrastructure in communities.... EDA gives priority to projects that use both public and private sector resources and leverage complementary investments by other government/public entities and/or non-profits.... Projects, such as business incubators, that support small to medium-sized business are well-positioned for funding. EDA's grant fund total was \$225 million for FY 2010.
- EDA makes investments in economically distressed communities in order to promote American innovation and accelerate long-term sustainable economic growth. Investments in environmentally-sustainable economic development are a key component to advancing and growing the economy. By encouraging environmentally-sustainable economic development, EDA helps to cultivate innovations that can fuel green growth in communities suffering from economic distress. Through investments in emerging regional clusters related to energy, cutting-

edge environmental technologies, green building practices, and sustainable communities that connect jobs to workers through smart location choices, EDA is well-positioned to foster job creation by limiting the Nation's dependence on fossil fuels, enhancing energy efficiency, curbing greenhouse gas emissions, and protecting natural systems. EDA operationalizes its role in green growth through an investment priority (i.e., Environmentally Sustainable Development) that encourages the use of its programs to support environmentally-sustainable economic development. The Environmentally Sustainable Development investment priority promotes job creation and economic prosperity through projects that develop and implement green products, processes, places and buildings. EDA, through the Environmentally Sustainable Development investment priority, seeks to support green projects (e.g., renewable energy, energy efficiency and reuse/recycling/restoration/preservation) economic development projects that will result in one or more of the following:

- Development or manufacture of a green end-product (Green End-Product). Investments that produce an end-product that furthers or contributes to sustainability in general or the environmental quality of the associated community or region. The end-product (what is being developed or produced) can take numerous forms, such as an activity, item, plan or program. For example, a Green End-Product might be a business incubator focused on renewable energy, infrastructure for a business park in which the primary tenant will produce solar panel components, or a feasibility study for developing a biomass-to-electricity facility.
- Greening of an existing function or process (Green Process). Investments that result in green enhancements such as improvements to the resource, energy, water, and/or waste efficiency of an existing function or process. The enhancements reflect changes to the life-cycle process of an existing function so that the function is performed in a more sustainable manner. For example, a Green Process might be the expansion of a tannery facility to allow for training programs in tannery operations which use water and energy in a more sustainable manner. The project would potentially impact multiple stages (e.g., use and reuse) of the associated training process life-cycle.
- Creation of, or renovation to, a green building (Green Building). Investments that result in the construction or renovation of a structure using green building techniques that result in a net positive outcome in terms of energy, materials, and/or water use efficiency. Such buildings or structures must pursue and receive U.S. Green Building Council LEED™ certification (or other comparable green building certification). The focus is on the green aspects of the building or structure itself, not what is being created, developed or undertaken within. For example, a Green Building might be a LEED-certified agribusiness commercialization center.
- Support or enhance a green place or location (Green Place). Investments located within mixed-use, transit-oriented areas that increase community revitalization, improve job access and protect rural lands and landscapes or other undeveloped or environmentally sensitive lands (e.g., greenfields or wetlands). Such investments are: (1) located within a ½ mile of quality transit (i.e., fixed guide way transit station or well-served bus transit stop) for urban or inner-suburban locations, or within a ½ mile of town center or main street area for rural locations; AND (2) situated on previously developed or degraded land – includes infill and

vacant property development, intensification of underutilized parcels, and/or the leveraging of existing public infrastructure; OR (3) sited within the boundaries of an area that has received the US Department of Housing and Urban Development's Preferred Sustainability Status designation (see http://portal.hud.gov/hudportal/HUD?mode=disppage&id=OSHC_PREF_SUST_STATUS_PG) and can demonstrate how the project is consistent with the Partnership for Sustainable Communities Livability Principles (i.e., provide more transportation choices; promote equitable, affordable housing; enhance economic competitiveness; support existing communities; coordinate policies and leverage investment, value communities and neighborhoods). For more information on the Livability Principles, please see <http://www.sustainablecommunities.gov/aboutUs.html#2>. For example, a Green place might be the construction of a business incubator on a former brownfields site that is located within 3/10 of a mile of a light rail stop.

In order to successfully demonstrate that a project addresses the Environmentally Sustainable Development investment priority, an applicant must clearly explain in its application how the proposed project satisfies at least one (note that no additional credit will be received for addressing more than one) of the project outputs noted above – Green-End Product, Green Process, Green Building, or Green Place. Questions regarding EDA's application procedures, including eligibility requirements, distress criteria, investment priorities, and application procedures should be referred to the EDA regional office [SEATTLE] that serves an applicant's State or region.

Copied from: <http://www.eda.gov/pdf/GreenGrowthOverview.pdf>

- The Office of Energy Efficiency and Renewable Energy (EERE) works with business, industry, universities, and others to increase the use of renewable energy and energy efficiency technologies. One way EERE encourages the growth of these technologies is by offering financial assistance opportunities for their development and demonstration. For a list of current financing opportunities for business, industry and universities, see <http://www1.eere.energy.gov/financing/business.html>.

Copied from EERE; <http://www1.eere.energy.gov/financing/>

- *Obama Administration Seeks Applicants for First Phase of 'Investing in Manufacturing Communities' Partnership*; Department of Commerce Blog; May 9, 2013. The Obama Administration today announced that it is accepting applications for the first phase of the "Investing in Manufacturing Communities" Partnership, a new initiative outlined in the President's fiscal year 2014 budget that will help accelerate the resurgence of manufacturing and create jobs across the country. In the first phase, the Departments of Commerce and Agriculture as well as the Small Business Administration and Environmental Protection Agency will award at least 25 grants of up to \$200,000 each to help regions develop long-term economic development strategies intended to create a globally competitive environment that will attract, retain and expand investment and spur international trade and exports. These "Implementation Strategies" will encourage collaboration at the local level to identify the region's comparative advantages and assets, and plan investments to expand the area's appeal to manufacturers. Phase Two of the "Investing in

Manufacturing Communities” Partnership: President Obama’s fiscal year 2014 budget includes funds for the Department of Commerce to award five to six IMCP “Challenge” grants, expected to be up to \$25 million each. These funds are intended to be supplemented by coordinated investments from several other federal departments and agencies. The 2014 challenge will reward communities for having the best long-term strategies for attracting private investment and increasing exports, and should combine many of the elements companies seek when they are deciding where to locate or expand, such as: specialized research centers at local universities; business incubators focused on targeted technology sectors; community college programs to train workers in targeted industries; public works projects to upgrade infrastructure or enhance energy efficiency; viable export promotion plans; well-integrated supply chains; and an engaged community of local government, education, workforce, and business leaders.

Copied from <http://business.usa.gov/blog/obama-administration-seeks-applicants-first-phase-investing-manufacturing-communities>

- ... launch the latest key components of the Obama administration’s Strong Cities, Strong Communities (SC2) initiative, which was announced in July 2011 to help strengthen local capacity and spark economic growth in local communities while ensuring taxpayer dollars are used wisely and efficiently. The Economic Development Administration (EDA)—an SC2 Federal partner—announced the \$6 million Strong Cities, Strong Communities Visioning Challenge to help economically distressed cities leverage innovative strategies to spur local economic and job growth. The challenge will start with the competitive selection of six cities, one in each of EDA’s regions. Each of the winners will receive up to \$1 million to conduct their own two-phase competitions. In the first phase, winning cities will encourage teams of experts in such fields as transportation planning, economic and community development, business incubation, and engineering to submit economic development proposals for their city or region. The highest-rated proposals, as evaluated by a city-appointed review panel, will receive cash awards. In the second phase, the finalists from the first round will compete for a cash prize by developing comprehensive economic development plans. Intergovernmental collaborations, such as the White House SC2 initiative, will empower local leaders to identify and leverage bottom-up strategies to strengthen their local economic ecosystems. Strategic, smart public investments that look to leverage other capital, especially private capital, and smart investments that are competitive—requiring a concrete strategy and plan—and real buy-in in the community as an essential prerequisite are the models of the future.

Copied from: New \$6 Million Strong Cities, Strong Communities Challenge Spur Economic Growth in Six Cities; June 25, 2012

State Grant Sources:

- *State Incubator Grants* (Washington): Washington State has a small business incubator program: 43.176 RCW. The department shall award grants to qualified small business incubator organizations for: (a) Construction and equipment costs, up to a maximum of three million dollars per recipient; and (b) Provision of technical assistance to small businesses, up to a maximum of one hundred twenty-five thousand dollars per year per recipient.

Copied from Socratek Law Reference;

<http://www.socratek.com/StateLaws.aspx?id=976990&title=43.176.030%20Small%20Businessincubator%20Program%20--%20Grants>

Other State Resources

- *Washington State University Extension Energy Program*
Provides training, energy-saving assessments, technical assistance, and support for innovative efficiency strategies to industrial facilities in the Pacific Northwest.
- *Washington State Financial Incentives for Renewables and Energy Efficiency*
Find state and local financial incentives that promote the implementation of renewable energy and energy efficiency upgrades.