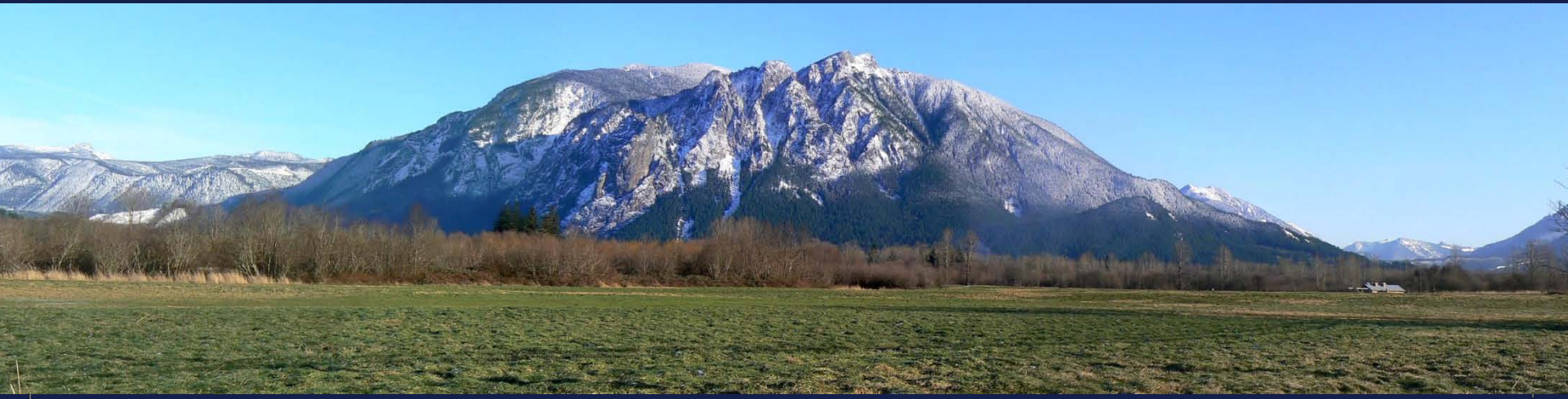


Photo courtesy of Dave Battey

Development of an Energy and Sustainability Element and Sustainability Action Plan

Workshop 1: Energy use, Fossil fuel use, and Water use

WHAT IS SUSTAINABILITY?

The most widely held definition is that of the Brundtland Commission:

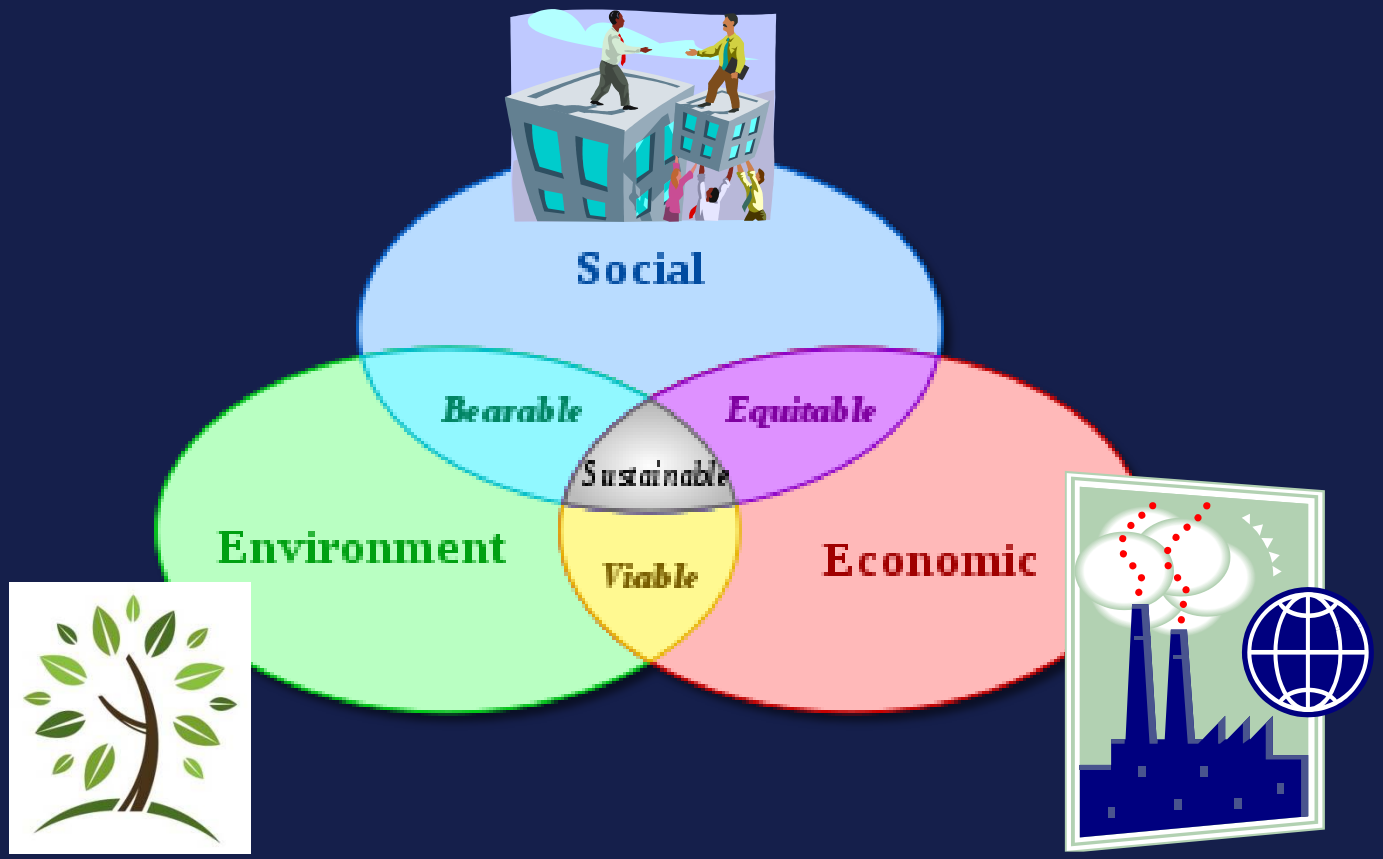
"Sustainability is the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs".

(The Bruntland Commission was created by the UN in 1983 to address concern about environmental deterioration's impacts on the human environment, natural resources, economic and social development.)

Sustainability refers to the "interdependent pillars" of economic, social, and environmental longevity.

Also known as: The 3 E's

* Environmental Quality
* Economic Vitality
* Equity / Social Benefit



Why are we proposing to create an Energy and Sustainability Element?

(Why should North Bend address sustainability)?

The sticks and carrots – New state policies, requirements and incentives

- **RCW 70.235.020 (passed in 2009) – Statewide GHG Reduction Goals.**
  - **GHG reduction to 1990 levels by 2020.**
  - **VMT reductions 18% by 2020**
  - **Requires DOE to inventory and track GHG emissions statewide.**
  - **Rules to industries of certain size to report greenhouse gas emissions to DOE**

- **RCW 70.235.070 (passed in 2009) – Grant funding eligibility.**
  - **"Beginning in 2010, when distributing capital funds through competitive programs for infrastructure and economic development projects, all state agencies must consider whether the entity receiving the funds has adopted policies to reduce greenhouse gas emissions."**

- **RCW 36.70A.695 (passed in 2009) – Electrification.**
  - **By July 2011 - Requires jurisdictions along the I-5 and I-90 corridors to accommodate electrical vehicle infrastructure in their Comp Plan and development regs.**
  - **Requires all state agencies to use electric or biofuel use in 100% of state vehicles by 2015.**

- **HB 1490/SB 1587 - effective Dec. 1, 2011:**
  - **Amends goal 10 of GMA (RCW 36.70A.020) to require local jurisdictions to "Establish land use and transportation patterns that , at a minimum, achieve state and federal greenhouse gas emissions reduction requirements." (above)**

The ethics – It's the right thing to do.

•We value the quality of life in North Bend and care about preserving its future.

•We have a role to play in addressing local and global environmental issues.

- **North Bend creates impacts as a City and as individuals.**
- **Our lifestyle here is generally based on a model that is relatively consumptive.**

Preparedness – the early-bird factor.

- **Change is inevitable:**
  - **Our economy now is highly dependant on cheap and abundant fossil fuels. Based on global consumption rates and the event of peak oil, this will not last long.**
  - **Survival of the fittest - those that don't adapt get left behind.**

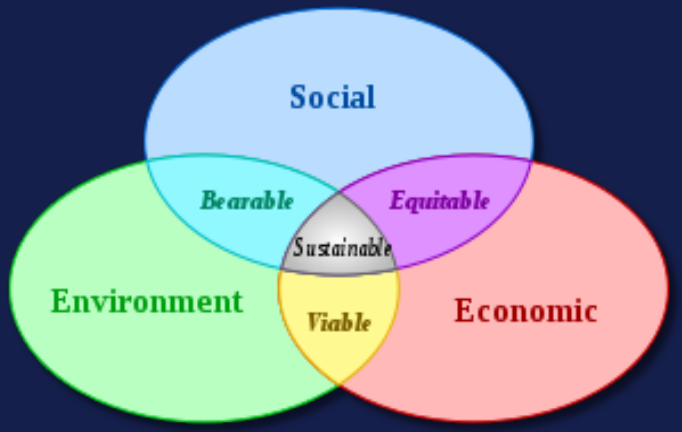
- **Very real consequences of climate change for North Bend:**
  - **Expected increased flooding**
  - **Decreased snowpack resulting in lower water availability**
  - **Prolonged droughts resulting in increased forest fire danger**

Essential keys to success in North Bend:

- **Simple – easy to understand and implement**

- **Economic – Small city staff and budget constraints**

- **Efficient - Minimize regulatory and time burdens**



THIS WORKSHOP:

- Fossil Fuel Use

- Water Use

- Electrical Energy Use

- (Future workshops, 1st of each month, will address other measures of sustainability)

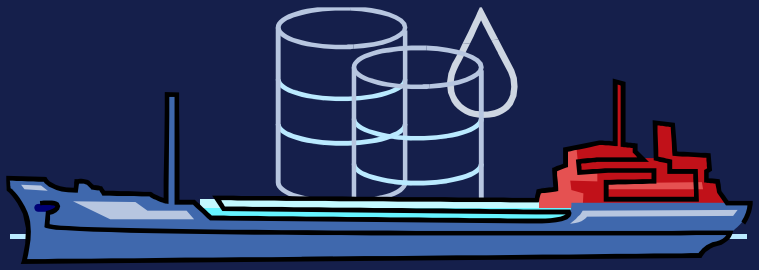
FOSSIL FUEL USE AND CONSERVATION

Fossil Fuel Use - Broad Trends:

- **Peak Oil**
  - **Point at which the maximum rate of global petroleum extraction is reached, after which the rate of production is in terminal decline.**
  - **Most energy experts agree that it is either here, or will be here in the next decade.**

- **Global Demand**
  - **Increasing global demand, particularly from China and India**
    - **China has now surpassed the US as the world's largest automobile manufacturer, and the world's largest auto market.**
    - **China and India are only the tip of the ice burg.**

- **Economics 101:**
  - **Diminishing production + increasing demand = significant cost increase.**
  - **Increased fossil fuel costs =**
    - **Increased electricity costs**
    - **Increased shipping costs**
    - **Increased product costs**



Fossil Fuel Use - Broad Trends:

- **Greenhouse Gas Emissions**
  - **Burning of fossil fuels is #1 GHG source.**
  - **Principally for transportation and building heating.**
  - **GHG emissions will be covered more fully in a later workshop.**

Fossil Fuel Use - State Requirements:

- **RCW 36.70A.695 (passed in 2009) – Electrification.**
  - **By July 2011 - Requires jurisdictions along the I-5 and I-90 corridors to accommodate electrical vehicle infrastructure in their Comp Plan and development regs.**

- **RCW 43.19.648 – Alternative Fuels**
  - **By June 1, 2018, local governments must satisfy 100% of their fuel usage for operating publicly owned vehicles and construction equipment from electricity or biofuel (to the extent determined practical by rules to be adopted by the Department of Commerce by June 1, 2015.**
  - **City should begin transitioning now to comply.**

Fossil Fuel Use - Economic Adaptation

–Anticipated cost increases for oil will affect much more than the direct cost of fuel.

- **Dependence on fossil fuels for municipal operations and infrastructure**
  - Paving widths relate to future maintenance costs
  - Heating and energy costs for public buildings
  - Vehicle fleet
  - Increased price volatility makes budgeting more difficult.

- **Long-term changing land use patterns based on future energy and oil costs**
  - Electric vehicle infrastructure
  - Housing choices
  - Transit systems and transit oriented development
  - Zoning considerations for new economic sectors

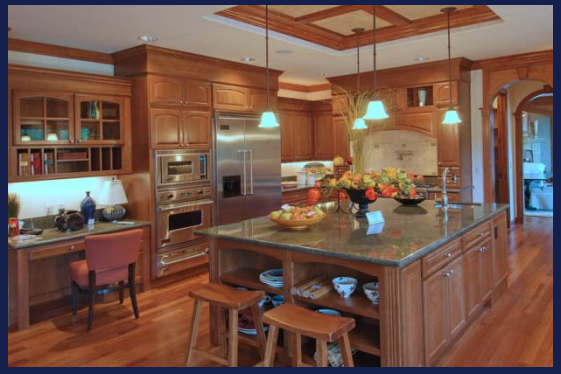
Photo courtesy of Southern Paving, Inc.

Photo courtesy of Mitsubishi Motors

Fossil Fuel Use – Options for Conservation:

Principal factors are <u>individual</u> decisions – City is not involved.

- **Gas mileage of personal vehicles owned**
- **VMTs/Commute distance**
- **Travel**
- **Consumption of goods**



Fossil Fuel Use – Options for Conservation:

Secondary Factors where the City is Involved:

- **Pedestrian and Bicycle-Oriented Design**
  - "Complete Streets" with sidewalks and bicycle lanes
  - Integrated grid network rather than cul-de-sacs and super-arterials
  - Code requirements favoring bicycle parking and reduced car parking

- **Land Use Density** Increased densities coupled with proper design = reduced VMTs.

- **City Operations**
  - Transition vehicle fleet to more fuel-efficient vehicles.
  - Building efficiency (natural gas use)
  - No-idiling practices

Fossil Fuel Use – Options for Conservation (continued):

- **Evergreen Fleets Initiative**
  - **Commitment to replace vehicle fleets with more efficient equipment, implement idle reduction measures, and "right-size" requirements.**
  - **Includes King and Snohomish Counties, 21 Puget Sound cities, and a number of private large fleet operators**
  - **Requires membership fee, and certification fee if certification is desired**

- **Bicycle police patrolling**
  - **Instituted by an increasing number of Cities**
  - **Means to make officers more accessible and interactive with community, reduce fuel use, and more quickly access areas hard to reach with vehicle (such as SVT)**

- **Policies supporting staff carpooling, use of transit and bicycles**
  - **City of Kirkland provides each employee with an annual Metro pass.**

Fossil Fuel Use – Simple Example:

- **City Hall Vehicle.**
  - **1998 Ford Expedition 4wd 4.6L V8.**
    - **EPA Mileage 12 City / 16 Hwy.**
  - **When replacement necessary, replace with Ford Focus SFE (non-hybrid basic economy car)***
    - ***Actually, should replace current vehicle with an electric or biofuel diesel, based on RCW, but this example makes comparison easier.**
    - **EPA Mileage 28 City / 40 Hwy.**
  - **Assuming 6000 Miles per year and $4/gallon gas, City would:**
    - **Save $989 annually in fuel costs**
    - **Emit 4,940 fewer pounds of carbon dioxide each year.**
  - **Savings per year significantly greater for hybrid vehicle.**

Vs.

Fossil Fuel Use – North Bend Current Practices:

- **Platting and street standards require interconnected developments with multiple points of entry.**
- **Street design standards require sidewalks with planter strips on all streets, and bicycle lanes on collectors and arterials, facilitating pedestrian and bicycle mobility.**
- **City does not currently have any policies or programs addressing direct fossil fuel use or conservation, including vehicle purchase considerations, anti-idiling practices, etc.**
- **City does not currently require bicycle parking (policy in the draft Transportation Element)**

Fossil Fuel Use – Proposed Policies:

ES Goal 7: Foster a transition of City operations and the community away from dependence on fossil fuels and toward the efficient use of alternative fuels and energy sources.

Policies:

ES 7.1 Increase the fuel efficiency of the City's vehicle fleet and implement a policy to consider fuel efficiency in the City's vehicle purchase decisions.

ES 7.2 Support telecommuting and flex-time schedule options for City Employees to reduce commuting.

ES 7.3 Implement a no-idling policy for all City vehicles.

ES 7.4 Educate the public about the benefits of not idling vehicles, and prohibit idling in certain circumstances and locations.

ES 7.5 Provide incentives that encourage the installation electric vehicle charging infrastructure by the private market.

WATER USE AND CONSERVATION

Water Use - Broad Trends:

- **Decreased Snowpack**
  - **Anticipated decline in annual snowpack in Cascades resulting from climate change.**

- **In-Stream Flow Protection**
  - **Cities and Counties required to maintain base flows necessary for habitat of fish and wildlife, particularly listed fish species, and other listed species dependent on them.**
  - **Significant financial implications for North Bend.**
    - **When flows below min threshold, City must mitigate for draws.**
    - **We pay about $85,000 per year for this mitigation.**

- **Eventual Increased Regional Demand**
  - **Not currently an issue, due to economy**
  - **Continued regional population growth**
  - **Increased competition for scarce water rights**

- **Economics 101:**
  - **Diminishing supply + increasing demand = cost increase.**

Water Use – North Bend Current Practices:

- **Landscape Standards in NBMC 18.18**
  - **requires 50% native and 70% drought-tolerant species.**
  - **Fire station will exceed this, with 70% native and 100% drought-tolerant.**

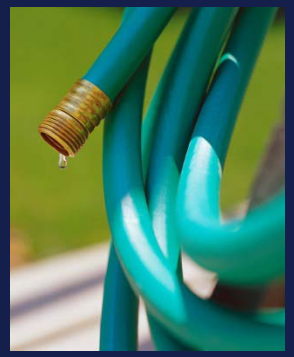
- **LID Demonstration Project regulations in NBMC 18.50**
  - **Requires 65% of site area be retained as open space**
  - **Requires 45% of developable site area retain native soils and vegetation**

- **2010 Water System Plan – Chapter 5 Water Efficiency Program:**
  - **Goal 1: Reduce system leakages by 2014 to meet DOH requirements**
    - **2008 leakage was 24.8%. Goal is to reduce this to 10% by 2014.**
    - **City has purchased leak-detection equipment to identify leaks and enable repairs.**
  - **Goal 2: Reduce per-capita annual use for SF residential accounts from 80 to 75 gallons per day by 2012.**
    - **Education to residents about water conservation (bill inserts, newsletters, website)**
    - **Providing customers their consumption history in utility bill**
    - **Conservation pricing – block rate structure encourages efficient water use.**

Water Use – Options for Conservation

- **Landscape maintenance and mowing in municipal operations**
  - Greater native landscaping for new public properties.
  - Naturalizing formal turf areas to minimize mowing and irrigation needs
  - Xeriscaping

- **Incentives for water saving features**
  - Rebates or reduction in Water System GFC for:
  - Washers, faucets, showerheads, toilets, etc. that meet EPA Water Sense efficiency standard (such as programs of Cascade Water Alliance and Saving Water Partnership)
  - Use of rainwater capture and reuse system (Green Building Incentive)



- **Standards for new development**
  - EPA Water Sense efficiency standard.

ELELCTRICAL ENERGY USE AND CONSERVATION

Energy Use - Broad Trends:

- **Decreased Snowpack**
  - **= less water for hydropower generation.**

- **Increased Demand**
  - **Continued population growth**
  - **Despite significant energy efficiency gains, overall *per-capita* energy use has remained steady for 40 years, as home size has increased, and we are plugging in more things than ever (eia.gov)**
  - **Electric Vehicles represent a huge new energy use**

- **Greatest bang-for-the buck in increasing energy availability to serve additional customers is conservation**
  - **PSE estimates that customer implementation of conservation measures over the next 20 years will save the equivalent of needing to construct 4 average-sized gas-fired powerplants. (pse.com)**

Energy Use – North Bend Current Practices:

- **Utilities Element of Comprehensive Plan:**
  - **Utility Goal 5: Promote conservation through cooperative efforts of regulations, programs and educational literature.**
  - **Utility Policy U-5.1: Work with the County and utility suppliers to develop public education and information materials that promote conservation.**
  - **Utility Policy U-5.4: Encourage utility providers to convert to cost-effective and environmentally compatible alternative technology and energy sources.**

- **City does not require installation of street lights in new subdivisions.**
  - **Option up to developer.**

- **No internal programs or requirements currently in place to implement energy conservation.**

Energy Use – Options for Municipal Operations

(Customer use addressed by provider programs and incentives. City focus is on municipal operations.)

Some municipal policy options to consider:

- **PSE Green Power Program participation**
  - Bellingham, Lacey, Olympia, Kirkland all use green power for some or all of their municipal needs.
- **Efficiency standard (Energy Star) for new fixtures and equipment**
  - Preferrable purchasing ordinance
- **Minimum LEED Standard or equivalent for public buildings**
  - Typically applicable to buildings over size threshold (5,000 square feet common).
  - Several local jurisdictions now implement this.

Energy Use – Options for Municipal Operations

Additional municipal policy options to consider:

- **Community Solar Project**
  - Participants buy shares in project to pay off initial investment, gain long-term profits
  - Frequently on municipal land or buildings

- **Reduce street lighting**
  - Many cities doing this now, principally as a budget rather than conservation measure.
  - Example: Montgomery, PA turned off 31 non-essential lights, saving $6,000 annually.
  - Each street light turned off saves approximately $100 -200 per year

Ellensburg Community Renewable Energy Park

Energy Use – Proposed Policies:

ES Goal 6: Reduce energy consumption and encourage energy efficiency and conservation in City operations and in the community.

Policies:

ES 6.1 Foster energy conservation practices among City employees.

ES 6.2 Make energy efficiency a priority in City operations and facilities, retrofitting city facilities with energy efficient lighting and equipment as practical. Participate in rebate and incentive programs from Puget Sound Energy and others to offset the costs of retrofits.

ES 6.3 Conduct energy audits of existing municipal buildings to identify high-priority retrofits and repairs for increasing energy efficiency and cost savings.

ES 6.4 Consider purchasing green power for the City's operations from green power programs available from local utility providers.

ES 6.5 When installing new or retrofitting existing street and public area lighting, select fixtures that minimize energy use and prevent over-lighting.

Continued…

Energy Use – Proposed Policies:

ES 6.6 Encourage or require the selection of US EPA Energy Star certified equipment and appliances when purchased for City use.

ES 6.7 Provide incentives for energy efficiency in new development, including Energy Star certified homes, buildings and plants.

ES 6.8 Encourage opportunities for local energy generation, including the installation of local solar and wind facilities. Evaluate potential sites and seek partners with other agencies, such as the school district, parks district, King County and other agencies with land and facilities that could accommodate local energy generation facilities.

ES 6.9 Review and revise building and development codes, design guidelines, and zoning ordinances to remove barriers to the installation of local-site energy generation facilities.

Additional thoughts and discussion?