Council Meeting Date: September 14, 2015 **Agenda Item:** 9(b)

CITY COUNCIL AGENDA ITEM

CITY OF SHORELINE, WASHINGTON

AGENDA TITLE:	Discussion and Update of Environmental Strategies
DEPARTMENTS:	Planning & Community Development and Public Works
PRESENTED BY:	Miranda Redinger, Senior Planner Rika Cecil, Environmental Programs Coordinator Thomas Puttnam, PE, AICP, LEED AP, President, Puttnam Infrastructure Elizabeth Willmott, Climate Solutions' New Energy Cities Program
ACTION:	____ Ordinance ____ Resolution ____ Motion __X_ Discussion ____ Public Hearing

PROBLEM/ISSUE STATEMENT:

On September 30, 2013, Council adopted the Shoreline Climate Action Plan, thereby committing to reduce community greenhouse gas (GHG) emissions 80% by 2050 (80x50), with an interim target of 50% reduction by 2030 (50x30). In 2014, the City reaffirmed that commitment by signing the King County-Cities Climate Collaboration (K4C) Joint County-City Climate Commitments (Attachment A), joining with the County and other cities in similar targets.

Since the selection of these specific targets was based on scientific consensus of what it would take to prevent the most devastating impacts of climate change, an analysis of what was feasible still needed to be completed. Through its partnership with the K4C, the City of Shoreline had the opportunity to work with Climate Solutions' New Energy Cities Program to perform a Carbon Wedge Analysis & Strategies (Attachment B) to examine what it would take for the City to achieve these "ambitious but achievable" targets. Council was introduced to the analysis and strategies at their October 14, 2014 meeting. No further action was taken.

This staff report and the attached memo re-introduce that analysis (including revisions from the original 2014 version), and provide a discussion of strategies currently underway, additional actions the City may take to meet reduction targets, and next steps to implement priority recommendations. These near-term priorities could be included in the 2016-2019 work programs, provided Council direction and allocation of resources.

Initially commissioned as part of the 145th Street Station Subarea Plan, Attachment C is a white paper exploring the concept of District Energy, including Combined Heat and Power. This includes a description of technologies and consideration of various opportunities within Shoreline, specifically in the light rail station subareas, the Community Renewal Area at Aurora Square, and Town Center. The author of the white

paper, Thomas Puttnam, will present findings as part of the presentation during the meeting.

RESOURCE/FINANCIAL IMPACT:
No resource impacts are anticipated as a result of this discussion. Some strategies recommended in this staff report may have future budget and/or resource implications, including for the 2016-2019 budgets and work plans.

RECOMMENDATION

No Action is required as part of this discussion. However, staff requests feedback on the strategies identified for near-term implementation, and direction on how Council would like to participate in prioritizing other potential strategies listed in Attachment B.

Staff recommends that resources be devoted to fulfilling commitments made through the Climate Action Plan and K4C Joint Commitment Letter, as opposed to updating the Environmental Sustainability Strategy. Specifically, staff recommends that the City pursue the following initiatives, beginning in 2016:

- Adoption of Living Building Challenge Ordinance and other incentives for "net zero" development (meaning the total amount of energy and/or water used by the building on an annual basis is roughly equal to the amount of renewable energy generated or water captured/reused on the site);
- Examining feasibility of District Energy or Combined Heat and Power in areas that are likely to undergo redevelopment, including the light rail station subareas, Aurora Square, and Town Center; and
- Conducting a Solarize campaign, including streamlining permitting for solar panels, exploring adoption of Solar-Ready regulations, and building on partnerships with local educational, professional, and non-profit organizations dedicated to increasing solar power generation in Shoreline.

Approved By: City Manager ***DT*** City Attorney ***MK***

BACKGROUND

Shoreline City Council and staff initiatives since 2007, listed below, have laid the groundwork for this level of analysis and action, and positioned the City to be a regional and national leader on how local governments can work to reduce the potential severity of climate change.

- Formation of interdepartmental Green Team (2007);
- Adoption of the Environmental Sustainability Strategy (2008);
- Analysis of City and Community Carbon Footprints (2009 and 2012);
- Launching of the forevergreen indicator tracking website (2012);
- Adoption of the Climate Action Plan (2013);
- Development of Carbon Wedge Analysis and Strategies (2014);
- Many progressive policies in Comprehensive Plan, Master Plans, Subarea Plans, and Management Plans;
- Completion of significant capital projects with a variety of climate and other benefits, such as the construction of a LEED Gold certified City Hall (2010) and the Aurora Avenue Corridor project (anticipated completion in 2016); and
- Adoption of K4C Climate Commitments (2014)

To build on these actions, at the City Council's 2015 retreat, Council determined to continue the focus of its goals for 2015-2017 towards achievement of Vision 2029 and being a sustainable city in all respects. This includes:

- **Sustainable neighborhoods** – ensuring they are safe and attractive;
- **Sustainable environment** – enhancing our built environment so that it protects our natural resources; and
- **Sustainable services** – supporting quality services, facilities and infrastructure.

Goal 2 directs the City to "Improve Shoreline's utility, transportation, and environmental infrastructure", and point number 7 states, "Review and update the sustainability recommendations in the City's adopted Environmental Sustainability Strategy".

In order to discuss potential implementation of this goal, it is necessary to provide more detailed background on the history of aforementioned initiatives, and how the City's level of sophistication in dealing with these complex topics has evolved.

Environmental Sustainability Strategy (ESS)- Based on the 2007 Council Goal to create "an environmentally sustainable community", $79,000 was allocated in that year's budget to develop the ESS. It set the foundation for Shoreline's sustainability initiatives for years to come, including defining a Mission Statement, Guiding Principles, Focus Areas, Strategic Direction, Public Involvement Strategies, Objectives, Targets, Indicators, and Recommendations. The Focus Areas were defined as City Operations, Practices, and Outreach; Energy Conservation and Carbon Reduction; Sustainable Development and Green Infrastructure; Resource Conservation and Waste Reduction; and Ecosystem Management and Stewardship. An appendix contained a list of 50 recommendations for implementation. By 2012, the Green Team and other staff had completed or initiated 85% of these. The remainder were determined to be infeasible at the time.

While much of the document was general in nature, and thus still relevant, many elements were tied specifically to objectives and potential indicators that have since evolved through development of more recent strategies.

Staff believes that spending resources to revise this foundational document would be less effective with regard to addressing Council's commitment to greenhouse gas reductions than dedicating such resources to implementing more recent and relevant strategies. Additional rationale for this recommendation is provided in this section; explanation of programs that staff believes would be the most impactful next steps is included in the Discussion section.

Forevergreen Indicator Tracking Website- One of the recommendations in the ESS was to "create baselines for all Sustainability Strategy focus areas and implement indicator tracking system to track progress over time." In 2011, through a $45,000 grant from the federal American Reinvestment and Recovery Act, staff contracted with O'Brien & Company and SiteCrafting to develop the *forevergreen* website. The website was intended to function as the first public-facing way to quantify benefits of and communicate about City initiatives to date, track and grade progress over time, and inspire households to take action. It is comprised of five Focus Areas, ten Performance Measures, twenty-seven Indicators, and various initiatives and metrics. The Focus Areas evolved from those included in the ESS to be more reader-friendly: Climate Protection, Natural Habitat, Resource Conservation, Built Environment, and City Initiatives.

In choosing the Performance Measures and Indicators, staff was careful to select those that were already tracked so as not to create additional work. The original intent was to update the indicators annually, with numerous positions responsible for inputting data. However, without an identified on-going project manager and given other project commitments of Green Team staff, the site has not been revised according to that timeframe. In order to establish more realistic expectations, the Green Team revised the group's long-term work plan to include a periodic (5 year) update of the Carbon Footprint Analysis that provides data points for metrics tracked. The following year staff would update the *forevergreen* site to examine progress, and the following year the City would communicate about successes and determine additional resource needs to meet proposed targets. Since the last Carbon Footprint Analysis was conducted in 2012, the next one would be scheduled for 2017, resources allowing.

Initial targets were general in nature because staff did not want to set them prematurely and miss the mark, and thought it better to analyze a few cycles of data to determine trends. If resources were available, it has been an aspiration to identify specific targets, as well as update the site with information from the Climate Action Plan and current projects and programs. In order to use the site to its full potential, it would be ideal to also add indicators related to economic development and social equity. Other indicator tracking systems, such as the 5 Milestones Toolkit include such metrics, but Shoreline has not had the staff capacity to consider expanded options thusfar.

Climate Action Plan (CAP) and Carbon Wedge Analysis (Analysis)- The CAP was the first document that focused explicitly on programs and policies that dealt with climate

change and greenhouse gas emissions. However, it retained the format of identifying issues and strategies based on the original Focus Areas outlined in the ESS, although again the titles evolved to be even more straightforward: Energy and Water; Materials and Waste; Transportation, Land Use, and Mobility; and Urban Parks, Trees, and Open Spaces. The category of City Initiatives was dropped to avoid redundancy with the other areas of focus.

Development of the CAP was funded by $54,700 from King County's Waste Reduction and Recycling Grant, the State's Coordinated Prevention Grant, and Recology CleanScapes funds. It was authored by Cascadia Group. The complete list of recommendations adopted as part of the CAP is included as Attachment D.

The Carbon Wedge Analysis studied and quantified what it would take to meet the greenhouse gas emission reduction targets adopted by Council through the CAP and reaffirmed through the K4C Joint Commitments. It was performed by Climate Solutions' New Energy Cities Program, which subsidized some of the cost of the work, as did King County. The City dedicated around $12,000 to the Analysis. More detailed background regarding development of the Analysis is included in Attachment B.

The Analysis categorized climate actions that the City could take in the following categories: Carbon Pricing; Transportation; Building Sector and Renewable Energy; Upstream Consumption and Solid Waste Management; and Biocarbon Storage and Natural Infrastructure.

Potential actions were based on national best practices and screening criteria that included climate benefit, resource availability, and alignment with existing City and regional policies. They were further classified into green, yellow, and red recommendations using the following rating system:

- Green- The strategy is already underway, or staff perceives limited barriers to starting the strategy now.
- Yellow- Staff cannot start the strategy now, due to specific obstacles that must be overcome or conditions that must be in place to start, such as new resources, tools, partnerships, or outside opportunities.
- Red- Staff identified too many obstacles to start the strategy in the next six years, or identified conditions that must be in place that are not likely to arise in the near-term or medium-term.

The Analysis included recommended priorities, including eight that entailed City Council advocacy, eight that involved partnership activities, and twenty that required full implementation through Council direction or allocation of resources. The conclusion indicated that "*if the City of Shoreline were to achieve all of the targets in the attached memo, through a mix of advocacy, partnerships, and local action, and if Washington State were to adopt carbon pricing, it is likely that the Shoreline community would meet the overall 50x30 goal.*

If the City of Shoreline were to implement the near-term strategies (classified as "green" and "yellow"), it would make significant progress toward achieving the 50x30 goal. However, implementation of the green strategies alone (i.e., those already

underway or ready for implementation in the next year) will not be sufficient. Moreover, the City does not have staff capacity to implement all green strategies in the near term, and will have to prioritize the most important strategies and/or allocate additional resources."

Staff and the NEC team recommended that the City continue to explore funding to implement the green strategies, as well as identifying the resources necessary to implement the yellow strategies, such as partnerships, tools, new resources, or outside opportunities. Delay in fully implementing these strategies may delay the current 50x30 goal. However, it is encouraging that of the list of 137 recommended strategies, Shoreline is already implementing or poised to take action on 32 of them.

Council discussed the Analysis on October 14, 2014 and expressed interest in receiving additional information about many of the recommendations, posed questions, and offered suggestions about public involvement and other considerations. However, due to more immediate priorities, such as light rail station subarea planning and the solid waste collection contract RFP, neither staff nor Council have been able to follow-up on proposals or engage in long-term prioritization exercises. In the foreseeable future, it is unlikely that such an exercise would take precedence over other work plan items. As such, staff has reviewed existing strategies and commitments, and recommends that three programs be considered as priorities for 2016-2019 work plans and budgets.

King County-Cities Climate Collaboration (K4C)- Joint Letter of Commitment- The K4C is a partnership between the County and cities to coordinate and enhance local government climate and sustainability efforts. In the first half of 2014, more than a dozen cities and the County worked to chart opportunities for joint actions to reduce greenhouse gas emissions and accelerate progress towards a clean and sustainable future.

This effort was based on the premise that "across King County and its cities, we are already experiencing the impacts of climate change: warming temperatures, acidifying marine waters, rising seas, decreasing mountain snowpack, and less water in streams during summer. These changes have the potential for significant impacts to public and private property, resource based economies like agriculture and forestry, and to residents' health and quality of life. The decisions we make locally and regionally, such as where our communities will grow and how they will be served by transportation, will set the stage for success or failure in reducing carbon pollution, making sound long-term investments, and ensuring our communities are livable and resilient to climate change impacts."

The K4C developed Principles for Collaboration and Joint County-City Climate Commitments focused on practical, near-term, collaborative opportunities between cities and King County. Mayor Winstead signed this letter on behalf of Shoreline, thereby pledging to "support the shared vision that these principles and actions represent…(and) commit to actively pursue those strategies and catalytic actions where our jurisdictions can make the most impact given our size, location, and development patterns."

The Climate Commitments were organized into Shared Goals, Climate Policy, Transportation and Land Use, Energy Supply, Green Building and Energy Efficiency, Consumption and Materials Management, Forests and Farming, Government Operations, and Collaboration. Each category included a Pathway, Policy Commitment, and Catalytic Projects or Programs. The pathway provided direction for achieving the goal, while policy commitments and catalytic projects or programs offered specific examples of how local jurisdictions could fulfill commitments.

Evolution of the Strategies- Many aspects of each of the strategies described above are consistent, including their organization by actions that the City had taken, actions that the City could take, and actions that individual households could take. Each had their own public outreach process, intended to raise awareness, provoke thoughtful discussion, and empower bold and impactful decision-making at all levels. Although the names of the Focus Areas changed over time, the main topics covered under each remained relatively similar.

The City's communication strategy about all of these issues also evolved. For example, on the *forevergreen* website, under "Actions you can take", an initial recommendation for how to reduce household energy use was to "wear a sweater and lower the temperature on your thermostat." However, by the time of development of the CAP, the recommendations had evolved to more impactful household actions like installing solar panels, getting a home energy audit, and buying an electric vehicle or using transit.

This process has been a natural progression as staff and the public became more well-versed in the issues, and as climate projections became more dire. The City began with a mission to become more environmentally sustainable and is now at the stage of implementing climate action. The Discussion section of this report will provide linkages between recommendations from each of the adopted strategies and the projects that staff believes to be the best candidates for near-term implementation: *adopting the Living Building Challenge Ordinance, examining feasibility of District Energy, and conducting a Solarize Campaign.*

Based on the understanding of limited resources, staff recommends pursuing implementation of these programs in lieu of updating the Environmental Sustainability Strategy. Staff believes that sufficient policy justification exists to pursue implementation of these programs, and that the intent of the Council goal to update the ESS can be fulfilled through this, and possibly future, discussion(s). Ultimately if Council would rather staff invest in a process to update the Environmental Sustainability Strategy, then staff will move in this direction, instead of pursuing implementation of the recommended programs.

DISCUSSION

CURRENT PROJECTS THAT IMPLEMENT THE CLIMATE ACTION PLAN

As mentioned previously, many of the recommendations identified in the Carbon Wedge Analysis are currently underway. One example of what the City has already done can be found in policies and regulations adopted as part of the 185th Street Station Subarea Plan on March 16, 2015. Specifically, the Analysis identified a number of ways that the City could reduce greenhouse gas emissions through Land Use Planning and Zoning

Reform. The following strategies identified in the Analysis were some of those advanced through adoption of ordinances associated with the subarea plan:

- Adopt and implement a Transit Communities Policy to align planning and zoning for transit-supportive development within walking distance of high-capacity transit.
- Reduce cost and uncertainty of project review in Transit Communities.
- Utilize zoning and permitting methods to concentrate new growth in proximity of services and transit.
- Increase the diversity of housing types in multi-family zones.
- Increase flexibility in Neighborhood Commercial Zones.
- Use zoning to increase affordable housing and affordable commercial space.

Another example of strategies identified in the Analysis that are currently underway deal with negotiating the next solid waste contract:

- Require solid waste collection (alternative in the proposals), and embed collection of food scraps and yard debris in future solid waste contracts.
- Outreach/incentives to increase recycling and composting.
- Compressed Natural Gas Trucks.
- Commercial Recycling Ordinance.
- Every-other-week garbage.

These considerations have been included in the proposed 2017-2024 solid waste contract Request for Proposal. Staff recommends that Council award the contract to a provider who can successfully address these criteria.

Many recommendations in the CAP and Analysis are similarly underway or included in upcoming work programs. In addition to fulfilling recommendations in the CAP and Analysis, they also advance strategies identified in the Comprehensive Plan, K4C Climate Commitments, and other guiding documents.

However, in addition to such strategies, staff recommends that Council consider adding three projects or programs to the 2016-2019 work plans and budgets.

POTENTIAL 2016-2019 PRIORITIES

For each of the potential near-term priorities identified below, discussion will include justification provided in guiding documents, and implications of project implementation for staff and budget resources.

Living Building Challenge Ordinance (LBCO)- Seattle adopted an LBCO in order to facilitate development of the Bullitt Center, the world's greenest office building. The International Living Futures Institute (ILFI) also offers a Petal Recognition program that emphasizes sustainability with regard to the following design considerations: site, water, energy, health, materials, equity, and beauty. The City could work with King County and the ILFI to adapt and adopt these programs. This work has been designated as a K4C priority for near-term implementation.

Justification from existing plans:

K4C Climate Commitments-

- Green Building and Energy Efficiency
    - Pathway: Reduce energy use in all existing buildings 25% below 2012 levels by 2030; achieve net-zero GHG emissions in new buildings by 2030.
    - Catalytic Policy Commitment: Join the Regional Code Collaboration (RCC) and work to adopt code pathways that build on Washington State Energy Code, leading the way to "net-zero carbon" buildings through innovation in local codes, ordinances, and related partnerships.

Climate Action Plan and Carbon Wedge Analysis-

- CAP- Energy and Water
    - 1G: Promote high-performance building and energy efficiency in private construction and remodeling through education and code development.
- Analysis- Building Sector and Renewable Energy Strategies
    - Remove code barriers to Zero Net Energy (ZNE) buildings/Living Buildings and adopt Living Building Challenge Ordinance.
    - Research what it would take to construct a ZNE/Living Building City facility or demonstration project.
    - Density bonuses, enabling developers to build more housing units, taller buildings, or floor space than typically allowed, as an incentive for ZNE or Living Building construction.
    - Property tax exemption for ZNE-ready developments.
    - Technical assistance for ZNE development

185th Street Station Subarea Plan Policies-

- Promote more environmentally-friendly building practices. Options for doing so may include:
    - Adoption of International Green Construction Code
    - Encouraging the development of highly energy efficient buildings that produce or capture all energy and/or water used on-site (Net Zero).
    - Partner with the International Living Future Institute to adopt Living Building Challenge Ordinance and/or Petal Recognition Program. Petal Recognition could include achievement of at least three of the seven petals (site, water, energy, health, materials, equity, and beauty), including at least one of the following petals: energy, water, or materials and all of the following: □
        - Reduce total energy usage by 25 percent over comparable building type and/or Shoreline Energy Code □
        - Reduce total building water usage by 75 percent, not including harvested rainwater, as compared to baselines estimated by the appropriate utility or other baseline approved by the Planning and Community Development Director □
        - Capture and use at least 50 percent of storm water on site.

Implementation: If the Council were to designate this as a 2016-2019 priority, it could be included in regulations to be adopted through the 145th Street Station Subarea Plan

or citywide. Representatives from the ILFI and King County have agreed to present information on the LBCO and Petal Recognition Program to the Council and Planning Commission, and assist staff to adapt and adopt pertinent ordinances and regulations. This would entail allocating staff and Planning Commission resources to develop appropriate codifying language and conduct public outreach. Staff believes this could be accomplished within the allotted timeframe and budget for the 145th Street Station Subarea Plan if Council were interested in developing pilot regulations. If this were to be adopted citywide, it could be a separate work plan item.

District Energy (DE)- This concept refers to the central provision of heating and/or cooling services within a defined service area. Electricity is sometimes also produced as part of a combined heat and power (CHP) system. Attachment C provides details of components, benefits, and models of DE systems, and opportunities that exist in Shoreline for their development. It also provides recommendations for how to implement a system in areas that are likely to redevelop. One reason that it could be beneficial to consider district energy in such areas is that market forces will encourage new buildings to use natural gas for heating, which could then lock owners into this infrastructure for the life of the building. While natural gas is a less carbon-intensive energy source than some of the alternatives, the process produces significant emissions of methane, which is nearly twenty times more potent as a greenhouse gas than carbon dioxide.

Justification from existing plans:
K4C Climate Commitments-

- Energy Supply
    - Pathway: Increase countywide renewable electricity use 20% beyond 2012 levels by 2030; phase out coal-fired electricity sources by 2025; limit construction of new natural gas based electricity power plants; support development of increasing amounts of renewable energy sources.
    - Catalytic Policy Commitment: In partnership with utilities, develop a package of county and city commitments that support increasingly renewable energy sources, in areas such as community solar, green power community challenges, streamlined local renewable energy installation permitting, district energy, and renewable energy incentives.

Climate Action Plan and Carbon Wedge Analysis-

- CAP- Energy and Water
    - 2E: Investigate the feasibility of development of district energy system(s) within the city.
- Analysis- Building Sector and Renewable Energy Strategies
    - Reduce use of natural gas for heating 40% by 2030 relative to 2012
    - Renewable energy demonstration projects
    - Building envelope & heating technology incentives
    - District energy systems and/or combined heat and power
    - Right-of-way for renewable energy
    - Community-wide distributed renewable energy plan

185th Street Station Subarea Plan Policies-

- Consider incentive program for new buildings to incorporate Combined Heat and Power systems and other innovative energy saving solutions.

Implementation: Attachment C outlines a multi-year approach to studying the feasibility of and potentially developing District Energy systems. It outlines five phases of a project: 1-Advocacy, Vision, and Policy Development; 2-Feasibility (Screening, Pre-Feasibility, and Feasibility); 3- Detailed Investment Analysis; 4- Development; and 5-Operations, Maintenance, and Expansion. It also outlines a seven step process for evaluation of feasibility, including anticipated costs and timeframes:

1) DE Feasibility Evaluation- Consultant Cost=$50,000; Staff Cost TBD; Timeframe=6 months
2) Preliminary Go/No Go Decision- Consultant Cost=$0; Staff Cost TBD; Timeframe=2 months
3) Third Party DE Provider Selection- Consultant Cost=$0; Staff Cost TBD; Timeframe=2-3 months
4) DE Evaluation Refinement and Initial Agreements- Consultant Cost=$0; Staff Cost TBD; Timeframe=6 months
5) Final Go/No Go Decision- Consultant Cost=$0; Staff Cost TBD; Timeframe=2 months
6) DE Development- Consultant and Staff Cost TBD; Timeframe=18 months
7) DE Operations- Cost TBD; Timeframe=Ongoing

If Council is interested in beginning this process, staff recommends allocating $50,000 in the 2016 budget for the feasibility evaluation. It would require staff resources to administer the contract process and take recommendations through governing bodies to reach a preliminary Go/No Go decision. Staff believes that this could be accomplished with existing personnel if it were deemed a priority, but it may have to wait until completion of current priority projects such as the 145th Street Station Subarea Plan.

Solarize Program- This program could involve a spectrum of initiatives, including removing code barriers and streamlining the process to permit photovoltaic (PV) systems, requiring that new construction be "solar-ready", and/or facilitating a campaign to promote PV installation, either on community buildings or private residences. Other King County jurisdictions have successfully streamlined permitting and conducted campaigns, including Bellevue, Mercer Island, Kirkland, and Snoqualmie. Such initiatives have been designated a near-term implementation priority for K4C, and partner cities have agreed to assist. Northwest Sustainable Energy for Economic Development (NW SEED) is another regional resource. Local partnership opportunities for these initiatives are great considering that Shoreline is home to the Shoreline Community College, which offers a solar design program, NW Mechanical, which installs PV systems, and Solar Shoreline, which hosts SolarFest and promotes local proliferation of solar systems. Such a program could be time-sensitive because federal tax credits are currently set to expire at the end of 2016.

Justification from existing plans:
K4C Climate Commitments-

- Energy Supply

- Pathway: Increase countywide renewable electricity use 20% beyond 2012 levels by 2030; phase out coal-fired electricity sources by 2025; limit construction of new natural gas based electricity power plants; support development of increasing amounts of renewable energy sources.
- Catalytic Policy Commitment: In partnership with utilities, develop a package of county and city commitments that support increasingly renewable energy sources, in areas such as community solar, green power community challenges, streamlined local renewable energy installation permitting, district energy, and renewable energy incentives.

Climate Action Plan and Carbon Wedge Analysis-

- CAP- Energy and Water
  - 2B: Streamline permitting for solar photovoltaic installations.
  - 2C: Through Environmental Services outreach and technical assistance, promote installation of renewable energy systems, and continue to support programs such as the Shoreline Solar Project.
  - 2D: Explore the feasibility of launching a "Solarize Shoreline" bulk-purchasing program of solar PV systems in coordination with NW SEED.
- Analysis- Renewable Energy Strategies
  - Standardization of solar installation process.
  - Solar-ready roofs policy.
  - Solarize campaign to install solar on rooftops of homes and businesses.

185th Street Station Subarea Plan Policies-

- Pursue Solarization program, community solar, or other innovative ways to partner with local businesses and organizations to promote installation of photovoltaic systems.

Implementation: Since this program could entail a number of different initiatives, it would first be important for Council to determine the scope of work. Should the City simply remove barriers and streamline permitting or sponsor a community-solar or individual homeowner campaign? Staff believes the former could be accomplished in the near-term with existing resources; however, a campaign would require financial and staff resources, including a project manager.

For Mercer Island's Solarize program, their Sustainability Manager conducted the campaign, including hosting community meetings and creating outreach material. Specifically, the campaign entailed 1 Solarize University training, 6 volunteer committee meetings, 5 public workshops, 500+ public contacts, 150 free site assessments, 250 hours of total staff time over 12 months, and 100 hours of total volunteer time over 5 months. It resulted in 47 new installations (generating 331 kilowatts of electricity); this is equivalent to a 245,000 reduction in pounds per year of carbon dioxide produced. The average size of the systems installed produced around 7 kilowatts, with an average cost of $31,000.

The timeline is included below:
Jan 2014: Explore Concept
Feb: Research/Planning

Mar: Contract NW SEED
Apr: Grantwriting
Apr: Campaign Plan
May: Issue & Score RFP
May: Select Installer
June: Start Workshops
Nov: End Campaign
Early 2015: Finish Installs

The City of Snoqualmie is also currently conducting a Solarize campaign in partnership with NW SEED. NW SEED offers a variety of support options, with a la cart pricing, including Campaign Manager Training/Kickoff (included in mini-grant if funding is available); grassroots outreach and solar education ($7,000); installer selection support ($4,500); designated webpage and participant tracking ($6,000); and reporting, metrics and evaluation ($3,000). If given direction to proceed, staff would determine which of these services would be most beneficial within an allotted budget.

TOPICS FOR COUNCIL DISCUSSION

Staff requests direction with regard to the following questions:

- *Would Council prefer that funding proposed in the 2016 budget be allocated to updating the Environmental Sustainability Strategy or implementation of 2016-2019 priorities identified herein?*
- *Are there specific questions or direction with regard to implementation of the Living Building Challenge Ordinance, District Energy, or Solarize Program?*
- *Should other programs be elevated to higher priority instead of those identified by staff?*
- *Should public education, outreach, and participation efforts be focused on specific programs and initiatives or more broadly on sustainability and climate issues in general?*

RESOURCE/FINANCIAL IMPACT

No resource impacts are anticipated as a result of this discussion. Some strategies recommended in this staff report may have future budget and/or resource implications, including for the 2016-2019 budgets and work plans.

RECOMMENDATION

No Action is required as part of this discussion. However, staff requests feedback on the strategies identified for near-term implementation, and direction on how Council would like to participate in prioritizing other potential strategies listed in Attachment B.

Staff recommends that resources be devoted to fulfilling commitments made through the Climate Action Plan and K4C Joint Commitment Letter, as opposed to updating the Environmental Sustainability Strategy. Specifically, staff recommends that the City pursue the following initiatives, beginning in 2016:

- Adoption of Living Building Challenge Ordinance and other incentives for “net zero” development (meaning the total amount of energy and/or water used by the building on an annual basis is roughly equal to the amount of renewable energy generated or water captured/reused on the site);

- Examining feasibility of District Energy or Combined Heat and Power in areas that are likely to undergo redevelopment, including the light rail station subareas, Aurora Square, and Town Center; and
- Conducting a Solarize campaign, including streamlining permitting for solar panels, exploring adoption of Solar-Ready regulations, and building on partnerships with local educational, professional, and non-profit organizations dedicated to increasing solar power generation in Shoreline.

ATTACHMENTS

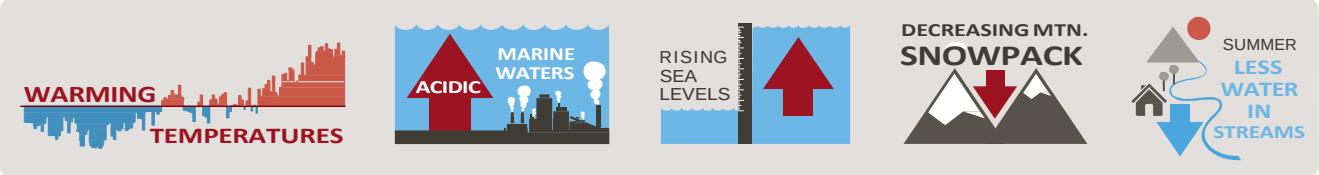
Attachment A: King County-Cities Climate Collaboration (K4C) Joint County-City Climate Commitments
Attachment B: Carbon Wedge Analysis and Strategies Memo
Attachment C: District Energy White Paper
Attachment D: Climate Action Plan Objectives and Recommendations

KING COUNTY-Cities
CLIMATE COLLABORATION

Joint Letter of Commitment: Climate Change Actions in King County

Climate change is a paramount challenge of this generation and has far-reaching and fundamental consequences for our economy, environment, public health, and safety.

Across King County and its cities, we are already experiencing the impacts of climate change: warming temperatures, acidifying marine waters, rising seas, decreasing mountain snowpack, and less water in streams during the summer.



These changes have the potential for significant impacts to public and private property, resource based economies like agriculture and forestry, and to residents' health and quality of life.

The decisions we make locally and regionally, such as where our communities will grow and how they will be served by transportation, will set the stage for success or failure in reducing carbon pollution, making sound long-term investments, and ensuring our communities are livable and resilient to climate change impacts.

Current science indicates that to avoid the worst impacts of global warming we need to reduce global greenhouse gas emissions sharply. The King County Growth Management Planning Council – a formal body of elected officials from across King County - voted unanimously on July 23, 2014 to adopt a shared target to reduce countywide sources of greenhouse gas (GHG) emissions, compared to a 2007 baseline, by 25% by 2020, 50% by 2030, and 80% by 2050.

Based on our shared assessment of emissions in King County, and review of potential strategies to reduce emissions, we believe that these targets are ambitious but achievable.

Building on the work of the King County-Cities Climate Collaboration (K4C) - a partnership between the County and cities to coordinate and enhance local government climate and sustainability efforts – more than a dozen cities and the County came together in the first half of 2014 to chart opportunities for joint actions to reduce GHG emissions and accelerate progress towards a clean and sustainable future.

The attached ***Principles for Collaboration*** and ***Joint County-City Climate Commitments*** are focused on practical, near-term, collaborative opportunities between cities and King County. These shared commitments build on the significant work that many of our cities and County are already taking. By signing this letter, we pledge our support for the shared vision that these principles and actions represent. Our cities commit to actively pursue those strategies and catalytic actions where our jurisdictions can make the most impact given our size, location, and development patterns.

Through focused, coordinated action, we will maximize the impact of our individual and shared efforts.

KING COUNTY-Cities
CLIMATE COLLABORATION

Elected Officials of King County and King County Cities

Dow Constantine
King County Executive

Larry Phillips
King County Council Chair

Bruce Bassett
Mayor, City of Mercer Island

Matthew Larson
Mayor, City of Snoqualmie

Shari E. Winstead
Mayor, City of Shoreline

Jim Haggerton
Mayor, City of Tukwila

Edward B. Murray
Mayor, City of Seattle

Denis Law
Mayor, City of Renton

Amy Walen
Mayor, City of Kirkland

John Marchione
Mayor, City of Redmond

Fred Butler
Mayor, City of Issaquah

Claudia Balducci,
Mayor, City of Bellevue

KING COUNTY-Cities
CLIMATE COLLABORATION

Principles for Collaboration

1. Climate change is the paramount challenge of our generation, and has fundamental and far-reaching consequences for our economy, environment, and public health and safety.
2. Strong action to reduce GHG emissions is needed, and the time is now.
3. Local governments can reduce greenhouse gas (GHG) emissions through many decisions related to transportation and land use, energy and green building, forests and farms, and consumption and materials management.
4. Many cities in King County have set individual climate goals and are taking steps to reduce local GHG emissions, and we need to build on this leadership.
5. Local solutions need to be implemented in ways that build a cleaner, stronger and more resilient regional economy.
6. Progress will require deeper engagement with communities of color and low income, immigrant, and youth populations. These communities can be more vulnerable to the impacts of climate change–from increasing flood risks to rising costs of fossil fuels – and historically less likely to be included in community-scale solutions or as leaders. We are committed to work in ways that are fair, equitable, empowering, and inclusive and that also ensure that low income residents do not bear unfair costs of solutions.
7. Federal and state policies and laws can help us achieve our goals, but countywide and local policy, programs and partnerships are needed to fill the existing gap to achieve local GHG targets.
8. Progress will require deep partnerships between the County, cities, utilities, businesses, nonprofit organizations, and other public sector agencies.
9. King County and nine cities have formed the King County-Cities Climate Collaboration (K4C), and we will work to build on this initial pledge, both in increased action and increased participation from additional cities.
10. We can accomplish more with a shared vision and coordinated action; collaboration will increase the efficiency of our efforts and magnify the impact of our strategies beyond what each of us could achieve on our own.
11. Our cities support the shared vision that the Joint County-City Climate Commitments represent, but it is not the intention that each city will pursue every catalytic action. Cities and King County will actively pursue strategies where they have the most impact and influence.
12. We will reconvene at least annually to share progress. We also dedicate a staff point person from our cities and from the County to help coordinate implementation of the following Joint County-City Climate Commitments, and to serve as a point person to the K4C.

KING COUNTY-Cities
CLIMATE COLLABORATION

Joint County-City Climate Commitments ●○○○

I. Shared Goals

Pathway: Adopt science-based countywide GHG reduction targets that help ensure the region is doing its part to confront climate change.

Catalytic Policy Commitment: Collaborate through the Growth Management Planning Council, Sound Cities Association, and other partners to adopt countywide GHG emissions reduction targets, including mid-term milestones needed to support long-term reduction goals.

Catalytic Project or Program: Build on King County's commitment to measure and report on countywide GHG emissions by sharing this data between cities and partners, establishing a public facing dashboard for tracking progress, and using the information to inform regional climate action.

II. Climate Policy

Pathway: Support strong federal, regional, state, countywide and local climate policy.

Catalytic Policy Commitment: Advocate for comprehensive federal, regional and state science-based limits and a market-based price on carbon pollution and other greenhouse gas (GHG) emissions. A portion of revenue from these policies should support local GHG reduction efforts that align with these Joint County-City Climate Commitments, such as funding for transit service, energy efficiency projects, and forest protection and restoration initiatives.

III. Transportation and Land Use

Pathway: For passenger vehicles and light trucks, reduce vehicle miles traveled by 20% below 2012 levels by 2030 and GHG emissions intensity of fuels by 15% below 2012 levels by 2030.

Catalytic Policy Commitment: Partner to secure state authority for funding to sustain and grow transit service in King County.

Catalytic Policy Commitment: Reduce climate pollution, build our renewable energy economy, and lessen our dependence on imported fossil fuels, by supporting the adoption of a statewide low carbon fuel standard that gradually lowers pollution from transportation fuels.

Catalytic Policy Commitment: Focus new development in vibrant centers that locate jobs, affordable housing, and services close to transit, bike and pedestrian options so more people have faster, convenient and low GHG emissions ways to travel.

Catalytic Project or Program: As practical, for King County and cities developing transit oriented communities around high capacity light rail and transit projects, adopt the Puget Sound Regional Council's Growing Transit Communities Compact. For smaller cities, participate in programs promoting proven alternative technology solutions such as vehicle electrification, as well as joint carpool and vanpool promotional campaigns.

Joint County-City Climate Commitments ○●○○

IV. Energy Supply

Pathway: Increase countywide renewable electricity use 20% beyond 2012 levels by 2030; phase out coal-fired electricity sources by 2025; limit construction of new natural gas based electricity power plants; support development of increasing amounts of renewable energy sources.

Catalytic Policy Commitment: Build on existing state renewable energy commitments including the Washington State Renewable Portfolio Standard (RPS) to partner with local utilities, state regulators and other stakeholders on a countywide commitment to renewable energy resources, including meeting energy demand through energy efficiency improvements and phasing out fossil fuels.

Catalytic Project or Program: In partnership with utilities, develop a package of county and city commitments that support increasingly renewable energy sources, in areas such as community solar, green power community challenges, streamlined local renewable energy installation permitting, district energy, and renewable energy incentives.

V. Green Building and Energy Efficiency

Pathway: Reduce energy use in all existing buildings 25% below 2012 levels by 2030; achieve net-zero GHG emissions in new buildings by 2030.

Catalytic Policy Commitment: Join the Regional Code Collaboration and work to adopt code pathways that build on the Washington State Energy Code, leading the way to “net-zero carbon” buildings through innovation in local codes, ordinances, and related partnerships.

Catalytic Project or Program: Develop a multi-city partnership to help build a regional energy efficiency retrofit economy, including tactics such as: collaborating with energy efficiency and green building businesses, partnering with utilities, expanding on existing retrofit programs, adopting local building energy benchmarking and disclosure ordinances, and encouraging voluntary reporting and collaborative initiatives such as the 2030 District framework.

Joint County-City Climate Commitments ○○●○

VI. Consumption and Materials Management:

Pathway: By 2020, achieve a 70% recycling rate countywide; by 2030, achieve zero waste of resources that have economic value for reuse, resale and recycling.

Catalytic Policy Commitment: Partner through the Metropolitan Solid Waste Management Advisory Committee on policy, projects and programs focused on (1) waste prevention and reuse, (2) product stewardship, recycling, and composting, and (3) beneficial use.

Catalytic Project or Program: Develop a regional strategy through the Comprehensive Solid Waste Management Plan process to reach 70% recycling through a combination of education, incentives and regulatory tools aimed at single-family, multi-family residents, businesses, and construction projects in King County.

VII. Forests and Farming

Pathway: Reduce sprawl and associated transportation related GHG emissions and sequester biological carbon by focusing growth in urban centers and protecting and restoring forests and farms.

Catalytic Policy Commitment: Partner on Transfer of Development Rights (TDR) initiatives to focus development within the Urban Growth Area, reduce development pressure on rural lands, and protect our most valuable and important resource lands.

Catalytic Project or Program: Protect and restore the health of urban and community trees and forests, for example through public-private-community efforts such as Forterra's Green Cities Partnerships.

Catalytic Project or Program: Partner on collaborative efforts to expand forest and farm stewardship and protection, for example through King Conservation District's farm management planning, landowner incentive, and grant programs.

Catalytic Project or Program: Expand our local food economy, for example by supporting urban and community farming, buying locally produced food, and participating in the Farm City Roundtable forum.

Joint County-City Climate Commitments ○○○●

VIII. Government Operations

Pathway: Reduce GHG emissions from government operations in support of countywide goals.

Policy Commitment: Develop and adopt near and long-term government operational GHG reduction targets that support countywide goals, and implement actions that reduce each local government's GHG footprint.

Catalytic Project or Program: In support of the Section V. Green Building and Energy Efficiency pathway targets to reduce energy use in existing buildings 25% below 2012 levels by 2030 and achieve net-zero GHG emissions in new buildings by 2030: execute energy efficiency projects and initiatives at existing facilities, measure existing building performance through EPA's Energy Star or equivalent program, implement high-efficiency street and traffic light replacement projects, and construct new buildings to LEED or Living Building Challenge standards and infrastructure to equivalent sustainability standards.

IX. Collaboration

Policy Commitment: Participate in or join the King County-Cities Climate Collaboration (K4C) – focused on efforts to coordinate and enhance city and County climate and sustainability efforts – to share case studies, subject matter experts, resources, tools, and to collaborate on grant and funding opportunities.

Catalytic Project or Program: Engage and lead government-business collaborative action through efforts such as the Eastside Sustainable Business Alliance.

MEMO

DATE: **August 2015**
TO: Shoreline City Council
FROM: Rika Cecil, Environmental Programs Coordinator
Miranda Redinger, Senior Planner
Elizabeth Willmott, Climate Solutions' New Energy Cities Program
RE: Carbon Wedge Analysis: Strategies to Implement the Climate Action Plan

Overview

This memo provides an update regarding the City of Shoreline's process of screening and prioritizing community greenhouse gas (GHG) reduction strategies to achieve the City's goal of 50% GHG reduction below its 2007 level by 2030 (50x30). Based on this process, City of Shoreline staff recommends that the Shoreline City Council take the following actions:

1. Schedule a Council workshop to select strategies from this screening process;
2. Direct staff time and allocate resources to implement the highest-priority strategies; and
3. Advocate at the regional and state levels for the highest-priority policies and programs related to community carbon reduction, including but not limited to the King County-Cities Climate Collaboration (K4C) Joint City-County Climate Commitments.

The proposals included in this memo are at a conceptual stage, and their full implementation will depend on Council direction and resource allocation.

Table of Contents

This memo has the following contents:

I. BACKGROUND

To date the Shoreline Green Team and Climate Solutions' New Energy Cities team have:

- Developed an Energy Map showing Shoreline's energy use and GHG emissions in the year 2012, and Carbon Wedge graphics that depict what it would take for the Shoreline community to achieve the 50x30 goal.
- Proposed sector-based targets that contribute to achieving the 50x30 goal.
- Assembled potential strategies and best practices from:
  - The City of Shoreline's Climate Action Plan;
  - *The Road to 80x2050* report on best practices in city climate action planning;
  - The City of Seattle's Climate Action Plan, and *Getting to Zero: A Pathway to a Carbon-Neutral Seattle*;
  - King County's Climate Action Plan and consumption-based GHG inventory; and
  - New Energy Cities' original research.
- Adapted quantitative findings from:
  - The City of Seattle's Climate Action Plan Transportation Technical Advisory Group, staffed by Nelson\Nygaard;
  - Stockholm Environment Institute analysis for the City of Seattle and King County;
  - New Energy Cities' ongoing partnership with the City of Issaquah, WA.
- Analyzed and reviewed the strategies based on:
  - Estimated climate benefit;
  - Resources needed to execute the strategies;
  - Whether the strategies are already underway; and
  - Alignment with existing Shoreline plans, the Joint City-County Climate Commitments under consideration by the King County-Cities Climate Collaboration (K4C), and state policy.
- Facilitated an open house/poster session from July 22, 2014 through August 1, 2014 for a broad group of Shoreline staff to provide input on potential strategies regarding:
  - Political complexity;
  - Financial complexity;
  - Timing;
  - New suggestions; and
  - Implementation readiness.
- Developed this memo to the Shoreline City Council, which represents staff feedback and recommendations regarding potential carbon reduction strategies for the City of Shoreline to consider pursuing.

II. STRATEGIES

The potential strategies are organized in the areas of transportation, buildings, energy supply, consumption, solid waste management, biocarbon/natural infrastructure, and measurement, with associated goals and targets. New Energy Cities calculated the targets based on what it would take to achieve the 50x30 goal, with input from City of Shoreline staff, as well as from the King County-Cities Climate Collaboration (K4C).

Current analysis indicates that if the City of Shoreline were to achieve all of the targets outlined in this memo, through a mix of advocacy, partnerships, and local action, and if Washington State were to adopt carbon pricing, it is likely that the Shoreline community would meet the overall 50x30 goal. A table comparing the targets in the K4C Joint City-County Climate Commitments and the proposed City of Shoreline targets is included in the Appendix.

Screening Criteria

In tables at the beginning of each suite of strategies, we provide additional information about the strategies according to the following screening criteria:

- Climate benefit;
- Additional resources needed to implement a strategy beyond what the City is already committed to funding and staffing for existing work; and
- Alignment with existing City or regional priorities, including K4C proposed commitments.

A checkmark indicates that a strategy is already underway.

Colors

Implementation readiness of individual strategies is expressed in the following colors:

Green

0-1 year, already underway or ready to start in 2015. The strategy is already underway, or staff perceives limited barriers to starting the strategy now.

Yellow

2-6 years, 2016-2020. Staff cannot start the strategy now, due to specific obstacles that must be overcome or conditions that must be in place to start, such as new resources, tools, partnerships, or outside opportunities.

Red

7 or more years, 2021-2030. Staff identified too many obstacles to start the strategy in the next six years, or identified conditions that must be in place that are not likely to arise in the near-term or medium-term.

TBD

Staff is still exploring the feasibility and potential timeframe of the strategy.

A. CARBON PRICING

1. CARBON PRICING GOAL: Support strong federal, regional, state, countywide, and local climate policy, including a science-based limit on carbon, and a carbon pricing approach that charges emitters for GHG pollution

a. Carbon Pricing Strategy

Climate benefit	In British Columbia, use of petroleum fuels dropped by 15% in the first four years of the province's carbon pricing policy; in the Regional Greenhouse Gas Initiative (RGGI) member states, the share of coal in the regional electricity generation mix has declined significantly under that carbon pricing approach (Sustainable Prosperity report on BC carbon tax, 6/2012; Energy Information Administration's Today in Energy newsletter, 2/13/2014).
Resources needed	Council time for advocacy.
Alignment	Washington State Executive Order on Climate Change.

Green

- Advocate for comprehensive federal, regional, and state science-based limits on carbon, and a carbon pricing approach that charges emitters for GHG pollution
    - *Carbon pricing creates a powerful business case for GHG reductions across sectors, which does not currently exist. A portion of revenue from carbon pricing should support local GHG reduction efforts, such as public transit, vehicle electrification, energy efficiency, and renewable energy. The K4C Joint City-County Climate Commitments include support for carbon pricing, and the Shoreline City Council can adopt those commitments, and can also advocate with K4C for carbon pricing.*

B. TRANSPORTATION

1. VEHICLE MILES TRAVELED (VMT) TARGET: Reduce VMT 35% by 2030 relative to 2012

a. Congestion and Parking Pricing—Suite of Strategies

Climate benefit	Nelson\Nygaard estimated that a similar suite of congestion and parking pricing strategies, if applied in Seattle, could result in 28% combined VMT reduction relative to 2030 projections.
Resources needed	No additional cost or staff time unless noted below.
Alignment	TBD.

i. Congestion Pricing

Green

- Research examples of pricing policies to reduce VMT in other cities, and determine best practices, factors for success, and local applicability
    - *In analysis for the City of Seattle's Climate Action Plan, Nelson\Nygaard found that "congestion pricing is the most essential strategy [for VMT and GHG reduction] over the long term, as it offers the benefit of substantial direct VMT and GHG reduction, while representing the single largest potential source of local or regional funding for the other actions and strategies [that a city can undertake to reduce transportation-related GHG emissions]." Because pricing policies are challenging to implement, staff can explore the roles that cities like Shoreline can play in a regional pricing conversation, as well as policies that can be implemented locally. Such research will become increasingly important as Shoreline's population and commercial base grows in the future. If proven to be applicable, educating the public and stakeholders about pricing benefits will be crucial.*

Yellow

- Pilot pay-as-you-drive (PAYD) insurance
    - *King County has initiated a pilot of PAYD insurance, and the State legislature has considered related legislation in the past. The City may not be a lead on implementing this model, but can stay open to opportunities to partner and enhance this work in the future.*

- Advocate for regional congestion pricing authority, with flexibility to dedicate revenues to multimodal projects and services, including Transportation Demand Management (TDM)
- Advocate for and implement other user fees, such as a VMT-fee, carbon tax, or other pollution taxes/fees

ii. Parking Pricing and Management

- *All parking pricing strategies outlined in this section may be appropriate at some point following initiation of light rail service. Monitoring will be necessary as stations and station subareas develop.*

Yellow

- On-street parking pricing where demand is high
- Reform off-street parking requirements in Transit Communities, while enacting and adjusting policies to minimize spillover impacts in adjacent areas
- Advocate for authority to develop and levy a non-residential parking space tax
- Develop a Parking Benefit District (PBD) in an area with high demand for on-street parking; dedicating revenues to access improvements within the District
- Improve parking customer information

Red

- Require parking cashout, such as providing free ORCA cards instead of free parking, for establishments with 100 or more employees
- Require or incentivize unbundled parking, which means renting or selling residential and commercial parking spaces separately from rent or purchase price of a building unit, rather than automatically including them with building space, and therefore likely reducing the total amount of parking required for a building
  - *Due to community concerns about residents parking on the street rather than in designated spaces when there is a separate charge, the Council included regulations to require bundled parking in the 185th Street Station Subarea Plan.*

b. Land Use Planning and Zoning Reform—Suite of Strategies

Climate benefit	Based on Nelson\Nygaard's analysis for the City of Seattle, this suite of strategies could result in 13% reduction in VMT relative to 2030 projections.
Resources needed	No additional cost or staff time unless noted below.
Alignment	Comprehensive Plan (CP), Climate Action Plan (CAP), and Transportation Master Plan (TMP).

i. Land Use Policy and Planning

Green

- ✓ Adopt and implement a Transit Communities Policy to align planning and zoning for transit-supportive development within walking distance of high-capacity transit
  - *Many such policies exist in the CP and TMP; additional policies and implementation, such as regulations, were adopted through the 185th Street Station Subarea Plan (185SSSP).*
- ✓ Reduce cost and uncertainty of project review in Transit Communities
  - *Light Rail Station Subarea Plans (LRSSP) include Planned Action Ordinances that exempt development analyzed under the City's Environmental Impact Statement (EIS), which is based on the State Environmental Policy Act (SEPA) requirements.*
- ✓ Advocate with other cities to amend State Growth Management Act (GMA) to encourage carbon reduction and resilience
  - *A committee of the Washington chapter of the American Planning Association is considering potential amendments.*
- ✓ Advocate at state level for city tools, such as funding and regulatory authority, to support Transit Communities
  - *Councilmembers and staff will continue to do this.*

TBD

- Create a Transit Communities Development Authority to facilitate/implement transit oriented development (TOD)
  - *Staff needs to research what this could entail, including what type of work plan adjustment it would require.*

ii. Zoning Reform

Green

- ✓ Utilize zoning and permitting methods to concentrate new growth in proximity of services and transit
  - *New zoning designations were developed for the 185SSSP that concentrate new growth in proximity to transit, including allowing for a mix of uses and removing density limits.*
- ✓ Increase the diversity of housing types in multi-family zones (including family-sized housing)
  - *Regulations adopted through the 185SSSP allow a variety of housing styles to facilitate greater choice.*
- ✓ Increase flexibility in Neighborhood Commercial Zones

- *Mixed-Use Residential (MUR) zones, adopted as part of the 185SSSP, increase flexibility with regard to uses.*

✓ Use zoning to increase affordable housing and affordable commercial space
- *Regulations adopted through the 185SSSPl codified a variety of incentives and mandates to increase housing affordability. This effort was recognized through an award from the King County Housing Development Consortium. Although often considered a strategy for social equity, increasing stock of affordable housing and business space (including live/work lofts) also allows employees to live closer to work, thereby reducing commuting VMT.*

Yellow

▪ Increase the diversity of housing types in single-family zones
- *Adoption of the 185SSSP rezoned existing single-family designations near the future light rail station to multi-family, including allowing a greater variety of housing styles.*

c. Transportation Demand Management—Suite of Strategies

Climate benefit	Based on Nelson\Nygaard's analysis for the City of Seattle, this suite of strategies could result in 14% reduction in VMT compared to 2030 projections.
Resources needed	No additional cost or staff time unless noted below.
Alignment	CAP, TMP, forevergreen, and K4C.

i. Marketing, Education, and Incentives

Green

✓ Transit-Oriented Development Community Engagement
- *LRSSP process has included extensive public engagement.*

✓ Expand and implement "Safe Routes" education programs and capital projects
- *The City has a "Safe Routes to School" program; LRSSPs and Sound Transit's Lynnwood LINK Final EIS include additional project recommendations to prioritize non-motorized connection to transit.*

✓ Community Walks/Bikes Program
- *The City Parks, Recreation and Cultural Services (PRCS) Department offers Shoreline Walks program.*

▪ Develop brand to recognize businesses and communities that promote the economic benefits of pedestrian and bicycle improvements
- *forevergreen logo could be used for this purpose.*

- Partner with King County and nonprofits to encourage shared transport: vanpools, rideshare, carshare, fleetshare
    - *At present, carshare programs may be more limited in their viability than vanpools, as they rely on significant residential and commercial densities to be successful. The City hopes that new zoning and future light rail stations will provide appropriate market signals to attract companies like Car2Go and Zipcar to Shoreline. Similarly, success of bikeshare programs depends on factors such as short or medium distance between destinations and the presence of separated bike lanes.*
- Expand environmental mini-grants, City communications, and other tools to encourage community efforts to shift to alternative modes of transportation
    - *City has mini-grant programs in place, such as climate education that empowers students to take action, which could be expanded to promote climate actions. Communications Plan could recommend additional efforts.*

Yellow

- Voluntary GHG reduction programs
    - *This could happen at the neighborhood level with such partners as Neighborhood Associations, school campuses, and the private sector. One example is the International Living Futures Institute's (ILFI) Living Communities program.*
- Expand the Commute Trip Reduction (CTR) program and support services to include medium-sized companies
    - *The State of Washington supports CTR programs by allocating a designated amount of funding per employer. CTR support for additional companies outside of this formula would be an additional cost that would require funding from the State.*
- Provide grants and incentives to convert parking and other areas to community uses, such as bike parking and plaza space, and facilitate business access by low-carbon transportation modes
    - *Development of the 2015 Green Team Communications Plan could include examination of related opportunities.*
- Expand customized travel options tools and outreach programs
    - *Staff anticipates that Sound Transit and Metro Transit will continue to enhance existing tools and outreach, and that the City will have new opportunities to partner in this area.*

ii. Planning and Infrastructure Management

Green

- ✓ Plan for multimodal mobility corridors
  - *Aurora Corridor Project, Town Center, commercial and mixed-use zoning regulations, and LRSSPs include policies, strategies, and codes for corridors.*
- Adopt a transportation decision hierarchy prioritizing (1) walking, cycling and transit, followed by (2) freight and goods movement, (3) high occupancy vehicles, and (4) single occupancy vehicles
  - *TMP includes these elements, but does not organize them by priority.*

Yellow

- Adopt a budget prioritization tool using Triple Bottom Line (TBL) assessment, which includes social and environmental factors, as well as traditional financial performance
  - *This could be achieved through an expansion of the Environmentally Preferable Purchasing Guidelines (EPPG) and would need to be incorporated into staff work plans. The City of Eugene, OR uses a TBL framework to prompt decision-makers to think about and explore the environmental, equity, and economic costs and benefits of public policy and programmatic choices.*
- Consider installation of "smart" water meters
  - *If City assumes water utility, installation of smart meters reduces operational VMT and staff time checking meters manually. The City of Renton estimated that smart water meters could save as much as $800,000 a year.*

d. Pedestrian, Bicycle, and Transit Facilities and Services—Suite of Strategies

Climate benefit	Based on Nelson\Nygaard's analysis for the City of Seattle, this suite of strategies could result in 7% reduction in VMT compared to 2030 projections.
Resources needed	The City must aggressively pursue grant funding for capital projects, land use strategies, and non-motorized transportation.
Alignment	CAP and TMP.

i. Pedestrian Facilities and Services

Green

- ✓ Safe Route to Transit (SR2T)
  - *The City has a Safe Routes to School program. LRSSPs and Sound Transit's Lynnwood LINK Final EIS will include additional recommendations, and could be implemented through LRSSP, TMP, and Capital Improvements Plan (CIP).*
- ✓ Enhance sidewalks, crossings, and public spaces in commercial zones
  - *Commercial regulations require improvements.*
- ✓ Pedestrian and Bicycle Master Plan

- *TMP contains these elements.*

Yellow

- Reallocate excess portions of public right-of-way in selected areas to public/pedestrian spaces
  - *Staff has identified limited maintenance resources as a concern regarding implementation of this strategy.*

ii. Bicycle Facilities and Services

Green

- ✓ Develop cycle tracks and greenways within the City with connections to and through densely populated neighborhoods
  - *TMP and LRSSP will include specific recommendations. Cost could be covered by developers and grant funding.*
- ✓ Implement intersection priority and safety improvements
  - *Reflected in TMP and Neighborhood Traffic Action Plans (NTAP).*
- ✓ Bike Parking
  - *Through the King County Regional Code Collaboration (RCC), the City adopted standards for short- and long- term bicycle parking. Additional regulations could be considered.*

Yellow

- Electric Bike Sharing
  - *Bike and program administrative cost could be covered by business sponsors/partners. Staff will monitor success of Seattle program.*

iii. Transit Facilities and Services

Green

- Advocate to increase transit service 100% by 2030 and 200% by 2050 (or set other time-specific targets for transit increase)
  - *As the City is not a transit provider, it can only act in an advocacy role or provide funding to transit providers for service.*
- Implement capital improvements in priority bus corridors (related to Transit Communities planning)
  - *LRSSPs and 145th Street Corridor Study will make specific recommendations.*

Yellow

- Support development of real-time transit info/trip planner app

- *Staff anticipates that Sound Transit and Metro Transit will continue to enhance existing tools and outreach, and that the City will have new opportunities to partner in this area.*

2. CLEAN TRANSPORTATION FUELS AND VEHICLE TECHNOLOGY TARGET: Reduce carbon intensity of private vehicles 25% by 2030 relative to 2012, by promoting clean transportation fuels and vehicle technologies

a. Private/Community Transportation Fuels and Vehicle Technology—Suite of Strategies

Climate benefit	This suite of strategies could result in 25% reduction in transportation sector GHG emissions. Note that a significant increase in private/community adoption of low- or zero-emissions vehicles will be necessary to achieve the target and related carbon reduction.
Resources needed	No additional cost or staff time unless noted below.
Alignment	CAP and K4C.

Green

- ✓ Advocate for 10% state Clean Fuels Standard
  - *Every member of Shoreline's City Council signed a letter expressing support for a statewide clean fuels standard. City staff will continue to monitor opportunities for City Council to support this proposal.*

Yellow

- Advocate for Seattle City Light to embrace a leadership role in EV adoption
  - *Shoreline could urge Seattle City Light to play a more aggressive role in driving EV adoption in Shoreline and the region.*
- Adopt EV-ready building code changes
  - *Through the RCC, the City adopted standards requiring commercial or mixed-use construction to include conduit for future charging stations. Additional regulations could be considered, but it may be appropriate to wait until market demand is higher.*
- "Plug-in-Ready" partnership to enable private adoption of electric vehicles (EVs)
  - *Elements of this initiative, such as providing or partnering with businesses to ensure EV-ready infrastructure in the City limits, will be necessary as EV demand increases. Shoreline could explore partnerships with K4C, Seattle City Light, and Shoreline Community College to promote EV adoption and EV-ready buildings.*
- Support development and adoption of next generation biofuels
  - *The City currently works with Central Market to collect waste cooking oil for biofuel production.*

b. Government Fleets and Transportation—Suite of Strategies

Climate benefit	Dependent on project.
Resources needed	Investment in green fleets and environmentally-friendly purchasing.
Alignment	CAP and K4C.

Green

- ✓ Continue investing in more efficient fleet vehicles
  - *Introduction of three high-efficiency hybrid vehicles saved the City an estimated 900 gallons of fuel and $3,400 in fuel costs in 2012. Shoreline could assume a leadership role by developing an EV replacement plan for the 48 vehicles of its current passenger fleet. K4C is investigating bulk (multi-jurisdictional) purchasing agreements to bring down costs. Per the Washington State Alternative Fuel Use Requirement for Public Fleets, effective June 1, 2018, all local government agencies must, to the extent practicable, use 100% biofuels or electricity to operate all publicly owned vehicles. K4C is partnering with Western Washington Clean Cities on ways to comply with this rule.*

- Continue to encourage a decrease in SOV commuting by City employees
  - *The City could consider reinstituting its prior incentive program. 80% of City employees still drive to work alone, making up 20% of the City's municipal GHG emissions.*

Yellow

- Consider participation in the Clean Cities consortium to reduce the use of petroleum and support clean air
  - *The Clean Cities consortium provides valuable guidance on how to incorporate clean vehicles in government fleets.*

C. BUILDING SECTOR AND RENEWABLE ENERGY

1. NEW BUILDINGS TARGET: Achieve zero net greenhouse gas emissions in 100% of new buildings community-wide by 2030

a. New Building Construction—Suite of Strategies

Climate benefit	100% of potential new emissions avoided.
Resources needed	Funding for Zero Net Energy (ZNE or Net Zero) or Living Building demonstration project. Staff time to adapt and adopt Living Building Challenge Ordinance.
Alignment	RCW 19.27A.160, K4C.

Green

- In partnership with the Regional Code Collaboration (RCC), advocate for the State of Washington to outline and adopt a code pathway for new buildings in 2031 to be 70% more energy efficient than new buildings were in 2006, and to create a stretch energy code program for cities
    - *State law currently mandates that the state energy code be progressively strengthened to meet this 70% improvement goal, which would put the goal of zero net GHG emissions in new buildings in reach. However, such code changes are not currently being implemented. In partnership with the RCC, Shoreline can support state action to implement this law.*
    - *Advocates are also proposing a stretch energy code, as Massachusetts has successfully implemented, which is a more energy efficient alternative to the standard energy provisions of a code that a municipality may adopt. The Massachusetts model includes utility incentives, which is reportedly an important contributor to the success of the stretch code program.*
    - *Staff will monitor opportunities for City Council advocacy.*
- Remove code barriers to ZNE buildings/Living Buildings and adopt Living Building Challenge Ordinance.
    - *King County and the International Living Futures Institute (ILFI) have already identified code barriers, but additional staff time may be needed to revise regulations. This is a 2016 priority for the K4C/RCC.*

Yellow

- Research what it would take to construct a ZNE/Living Building City facility or demonstration project

- *According to the New Buildings Institute assessment of ZNE buildings: "Costs for getting to zero are difficult to distinguish from overall project costs, however, the team conducted an analysis to identify incremental cost premiums for energy and water conservation, as well as for photovoltaic and water reuse systems that would bring the project to net zero. The cost premium for energy efficiency was approximately 1-12% depending on the building type. This rose to 5-19% for net zero energy."*

- Restructuring of development review fees as incentive
  - *Staff will monitor the City of Seattle's progress in exploring this concept, including potential revenue reduction.*
- Density bonus, enabling developers to build more housing units, taller buildings, or floor space than typically allowed, as an incentive for ZNE or Living Building construction
  - *This could be explored as a mandatory component of a development agreement in MUR-70' in light rail station subareas.*
- Property tax exemption for ZNE-ready developments
  - *This requires advocacy at the state level for authority to implement. Staff will monitor progress by the City of Seattle in exploring this concept, including potential revenue reduction.*
- Technical assistance for ZNE development
  - *This strategy requires staff training and capacity.*

2. EXISTING BUILDING RETROFIT AND RENEWABLE ENERGY TARGET: Reduce use of natural gas for heating 40% by 2030 relative to 2012

Climate benefit	New Energy Cities estimated the following community-wide natural gas reduction benefits associated with different types of strategies: ▪ Retrofit policy requiring all cost-effective upgrades—10-12% if targeted to homes with natural gas. ▪ Regional retrofit program—5-10% at current program participation rates and results. ▪ Energy assessment and disclosure policies—No estimates developed because these policies are part of a facilitating strategy, and are not direct reduction drivers. ▪ Community Resource Conservation Manager—4-5%, if incentives are in place. ▪ Retrofit policy targeted to worst-performing buildings—3-4%, depending on how the program is designed. ▪ Utility and/or City incentives—2-3%. ▪ Voluntary energy challenge—2-3%. ▪ Demonstration project—Less than 1%. ▪ Solarize or other distributed renewable energy campaign—No estimates developed at this time; estimates will be necessary to inform strategy for full achievement of natural gas reduction goal New Energy Cities did not calculate the combined effects that these policies would have if implemented together, meaning that the numbers here cannot be summed for a single total reduction value.
Resources needed	See notes below strategies for details.
Alignment	CAP and K4C.

a. Existing Building Retrofits—Suite of Strategies

Green

- Advocate for dedicated state funding of local/regional energy efficiency programs
  - *Climate Solutions' New Energy Cities program is currently researching what it would take to fund and implement a regional retrofit program at the scale necessary to achieve K4C and Shoreline building energy use reduction goals. Preliminarily, we know that the states, such as CA, MA, and NY, which have succeeded in fostering these programs are those that dedicate carbon pricing revenue to work toward these goals. Staff will monitor opportunities for City Council advocacy toward these goals.*

- Support use of existing utility incentives for energy efficiency and conservation in buildings, and advocate for utilities to adopt outcome-based incentives, which are based on actual energy savings of an energy upgrade rather than projected savings of individual actions
    - *As part of the K4C work program on utility outreach, Shoreline could advocate for PSE to expand its existing outcome-based incentive program, and for Seattle City Light to adopt a similar approach.*

Yellow

- Retrofit policy requiring all cost-effective upgrades at time of renovation or sale of building
    - *This policy would need to be preceded by the development of a much more robust regional retrofit economy, with widely available services that make it easy for residents and businesses to retrofit their buildings.*
- Regional retrofit program
    - *Cost would depend on the structure of the program, which cities could fund jointly and implement through an interlocal agreement, or which could be funded from state carbon pricing revenue. Climate Solutions' New Energy Cities program is currently researching what it would take to fund and implement a regional retrofit program at the scale necessary to achieve K4C building energy use reduction goals.*
- Audit/disclosure policy
    - *The City of Seattle has 2.5 FTEs for education, troubleshooting, and enforcement of its benchmarking and disclosure policy. This strategy may be better suited for implementation at County level and/or via regional collaboration. It could also go hand in hand with a regional retrofit program.*
- Create a permanent Community Resource Conservation Manager position on City staff to support residential and commercial energy efficiency and renewable energy projects
    - *The cost would depend on the structure of the role and program. If the position were dedicated only to Shoreline, it could be staffed by 1 full-time employee (FTE). Alternatively, a regional network of such individuals could be jointly funded by the K4C cities and implemented through an interlocal agreement*
- Retrofit policy requiring upgrades of worst-performing buildings, based on results of annual/regular energy use assessment process
    - *This policy would need to be preceded by: 1) an audit/disclosure policy that helps to identify the worst-performing buildings, and 2) the development of a much more robust regional retrofit economy, with widely available services that make it easy for residents and businesses to retrofit their buildings.*

- Incentives and education for large multifamily and commercial building owners to continuously monitor and optimize the performance of their buildings
    - *This strategy would require coordination with multi-family and commercial building owners to help design an incentive program, and staff analysis and capacity to implement.*
- Property tax exemption for existing rental housing owners who undertake significant energy retrofits
    - *This requires advocacy at the state level for authority to implement. Staff will monitor progress by the City of Seattle as it explores this concept, including potential revenue reduction.*
- Voluntary energy challenge to encourage energy use reduction in businesses, schools, and/or homes
    - *City could partner with King County to build on Green Schools program and Best Workplaces for Waste Prevention and Recycling recognition program. However, staff capacity for this program is limited; would need to determine the level of support the City can provide and integrate it into work plans.*
- Zero Net Energy (ZNE)/Living Building retrofit demonstration project
    - *Significant staff time and funding would be needed to implement this project, per the City of Issaquah's ZHome townhome demonstration. Shoreline would also need to partner with a progressive developer/owner.*

b. Renewable Energy—Suite of Strategies

Green

- Renewable energy demonstration projects
    - *Cost depends on site and technology. Parks and schools are visible, education-oriented sites that could host these projects.*
- Standardization of solar installation process
    - *Staff is following progress of cities working with Northwest Solar Communities to standardize permitting process.*
- Building envelope & heating technology incentives
    - *The City of Seattle uses $200,000 in general funds for activities not covered by existing utility incentives, such as offering homeowners the opportunity to transition off of heating oil.*
    - *Shoreline could offer expedited permit review or reduced fees for eligible projects.*
- Solar-ready roofs policy
    - *Staff is following progress of cities working with Northwest Solar Communities and the RCC on model language.*

Yellow

- District energy systems and/or combined heat and power
  - *Sewer utility planning could capture heat and convert it to energy, which would take additional direction and resources to investigate and implement.*
  - *Council could further direct staff to investigate the feasibility of district energy or combined heat and power as part of the planning process for assumption of water and wastewater utilities, or through Development Code regulations on the scale of individual projects.*
  - *As one illustration of what is possible, the City of Portland, OR is partnering with Lucid Energy to generate hydroelectric power from municipal water pipes.*
- Support of utility-provided program that offers green power purchase options to City facilities, residents, and businesses
  - *No additional cost to City for community adoption of green power; residential customers may purchase green power in increments of 25%, 50% or 100% of their electricity use for $3, $6 or $12 per month, and business customers may participate at any level and earn Silver, Gold or Platinum Partner recognition based on their annual electricity (kilowatt-hour) use.*
- Solarize campaign to install solar on rooftops of homes and businesses
  - *Northwest SEED, the nonprofit administrator of the Solarize campaign, offers support to cities interested in starting a Solarize program. Sample support packages range from $3,500 to $7,500, with varying degrees of online support and on-call program coaching. Shoreline can also request a customized bid for Northwest SEED to serve as the overall campaign manager. In general, a Solarize partnership could present an opportunity to work with Shoreline Community College, and could also be cross-marketed with an EV campaign for high-income residents and businesses.*
- Right-of-way for renewable energy
  - *The City could waive lease payments for right-of-way site permits. This strategy requires more investigation by staff on a site-by-site basis.*
- Community-wide distributed renewable energy plan
  - *As a follow-up to the district energy study anticipated in 2015, a distributed energy plan would include a community-wide target to adopt a defined percentage of distributed renewable energy to help reduce direct natural gas consumption, and related technical analysis regarding how to achieve such a target.*

c. Government Buildings, Facilities, and Operations—Suite of Strategies

Green

- Work with utility providers to develop a package of strategies for sustainability and carbon reduction
    - *Strategies could include:*
        - *Rate structures or incentives for customers to conserve water.*
        - *Installation of smart water meters to reduce vehicle miles required for utility staff to read meters. The City of Renton estimated that installation of smart water meters could save them as much as $800,000 a year.*
        - *Sewer heat and/or micro-hydropower capture, as described in the Renewable Energy section.*
- ✓ Work with Seattle City Light to continue converting streetlights to LEDs
    - *The Shoreline Climate Action Plan noted that this would reduce the City's current estimated streetlight electricity use by more than half. This strategy is already underway and almost fully implemented.*
- Consider creating a permanent position related to sustainability and climate action, such as a Community Resource Conservation Manager to support residential and commercial energy efficiency and renewable energy projects
    - *See details in Existing Building Retrofits section.*
- Incorporate energy efficiency into upgrades of City facilities to meet ENERGY STAR building performance standards for similar building types, and incorporate energy efficiency best practices into new City buildings
    - *Staff recommends tracking facility energy use through ENERGY STAR building software to identify the best efficiency upgrade opportunities.*
- Incorporate energy efficiency best practices into new City buildings and consider seeking green building certifications such as LEED or ENERGY STAR for new construction projects, potentially including the new police station to be built near City Hall.
    - *K4C is working on a related commitment to build "green" facilities in its cities. Staff will track this conversation and may wish to advocate that Shoreline be home to one of the proposed projects.*
- Expand the City's Environmentally Preferable Purchasing Guidelines (EPPG) to include additional products that increase energy efficiency
    - *More staff capacity would be needed to expand and fully implement the EPPG.*
- Increase City green power purchase through Seattle City Light's Green Up program
    - *Based on the City Hall's LEED Gold award and amount of kilowatt-hours (kWh) used annually, Shoreline pays $8,730 each year for Green Up. The City's investment in 2012 prevented the release of 409,061 lbs. of GHG emissions, and supported the production of 291,240 kWh of renewable*

energy. These benefits could increase if the City obtains the Platinum level for $12,350, requiring Council approval during the budget process.

- Assess potential replacement of fixtures and equipment in high-use operations in all City facilities with high-efficiency options
    - *As a cautionary note, staff has concerns about vandalism in these facilities.*

Yellow

- Make efficiency upgrades to Shoreline Pool facility to reduce energy use and lower operating costs as funding allows
    - *City would likely need to renew the Parks bond to make these improvements. Staff has also suggested using solar power for pool heating.*

Red

- Once state regulatory issues have been resolved, investigate the opportunities for rainwater harvesting and greywater reuse at existing and new City facilities and open spaces
    - *The City's ability to implement this strategy will depend on the outcome of State regulations regarding greywater use, but the City could advocate for progressive legislation to enable this use.*

D. UPSTREAM CONSUMPTION AND SOLID WASTE MANAGEMENT

1. UPSTREAM CONSUMPTION TARGETS:

- **Reduce community food waste by 3%**
- **Reduce size of homes by 30% across 25% of residential sector**
- **Double the useful life of household furnishings and clothing for 25% of community consumption**

Climate benefit	In 2012, King County published an expanded GHG emissions inventory, called a consumption-based GHG inventory, which examined GHG emissions associated with household and business purchasing. This view of emissions is significantly larger in scope than the typical community GHG inventory, and is also outside the scope of the Carbon Wedge analysis. Based on this work by Stockholm Environment Institute, New Energy Cities made the following carbon reduction estimates of potential targets that the City of Shoreline could adopt (all relative to an expanded view of the community footprint): ▪ Food waste reduction target—0.6% carbon reduction ▪ Home size reduction target—0.4% carbon reduction ▪ Furnishing and clothing target—0.5% carbon reduction. These figures are approximate, and measurement of progress toward these goals would be challenging.
Resources needed	No additional resources needed if the primary action is to incorporate related messaging into 2015 Green Team Communications Strategy.
Alignment	CAP and K4C.

a. Reducing Food Waste and Food Miles Traveled—Suite of Strategies

Green

- Food Too Good to Waste Campaign
  - *The City could partner with King County under an existing US Environmental Protection Agency pilot campaign.*
- Join the King County Farm City Roundtable
  - *The City could help educate the public about urban agriculture and encourage farmer-grocery-restaurant relationships, in partnership with Diggin' Shoreline, Seattle Tilth, King County, and others.*

b. Low-Carbon Construction—Suite of Strategies

Green

- Modify Development Code regulations to encourage smaller homes/structures
  - *The Planning Commission could discuss this as part of the 145th Street Station Subarea Plan (145SSSP) or as part of a future batch of amendments.*
- ✓ Adopt construction and demolition waste amendments in Shoreline Municipal Code
  - *The City instituted a Demolition Waste Diversion Plan in 2015.*
- Incentives to reduce construction waste, including encouraging "EcoMod" or green modular homes that are both green and prefabricated
  - *This could include designating pre-approved building plans for expedited permitting when City staff has reviewed them. Planning Department staff could researching this strategy further.*

Yellow

- Technical assistance and incentives to encourage small or clustered housing
  - *This may require staff training and additional capacity. Council may wish to revisit regulations for cottage housing.*

c. Extending the Useful Life of Products—Suite of Strategies

Green

- Use mini-grant program and 2015 Communications Strategy to promote sharing, lending libraries, repair education, and outreach on consumption choices
  - *The City could partner on this strategy with Neighborhood Associations, King County Green Schools Program, Senior Services, and Aging Your Way, including promotion and creation of lending libraries, and inter-generational bartering of skills and services.*
- Advocacy on product stewardship and support/promotion of reuse markets
  - *Staff is exploring how to incorporate this into the 2015 Green Team Communications Plan.*
- Outreach to Chamber of Commerce on sustainable purchasing and green businesses
  - *Staff is exploring how to build on related past experience with the Chamber of Commerce. The City could also partner with King County and other cities on a regional green business program.*

2. SOLID WASTE MANAGEMENT TARGET: Achieve a 55% recycling rate citywide by 2020, and zero waste of resources that have economic value for reuse, resale, and recycling by 2030

Climate benefit	Decrease in GHG emissions due to lower energy requirements, compared to manufacturing from virgin inputs; other avoided GHG emissions; increase in carbon forest sequestration; increase in soil carbon storage.
Resources needed	No additional resources needed if accomplished through future solid waste contracts.
Alignment	CAP, K4C, and King County Solid Waste Comprehensive Plan**.**

a. Recycling and Composting—Suite of Strategies

Green

- ✓ Require solid waste collection, and embed collection of food scraps and yard debris in future solid waste contracts
  - *Only commingled recycling is embedded in current contract. A solid waste collection requirement and embedded collection of yard debris and food scraps are being considered in the 2017-2024 RFP solid waste contract.*
- ✓ Waste audit program
  - *This program is in the City's current contract and is included in 2017-2024 proposed RFP contract.*
- ✓ Material ban—residential and business garbage
  - *Under the current contract, household hazardous waste is banned. The City could enhance its existing efforts by working with regional partners to site a more visible location or to enhance signage that helps residents find the stationary facility.*
- ✓ Outreach/incentives to increase recycling and composting
  - *This is already underway through the current contract. Embedding residential yard debris and food scraps recycling in the 2017-2024 contract would greatly enhance waste diversion from the landfill and improve resource conservation. King County is discussing this option as a regional agreement, in order to maintain the landfill for a longer period of time.*
- ▪ Compressed Natural Gas Trucks
  - *Require 2016 Compressed Natural Gas Trucks for solid waste collection in 2017-2024 contract to keep rates low when oil prices increase, and to assist the City in meeting its climate targets.*
- ▪ Recycle More—It's Easy to Do program
  - *This strategy requires partnering with King County to leverage its existing program.*

- Outreach/incentives to use recyclable food supplies
  - *Staff is researching related efforts in the City of Seattle.*
- Advocacy for increased recycling and composting at transfer stations
  - *King County takes the initiative to propose new items and is receptive to Shoreline's suggestions of materials to accept for recycling at the Shoreline Transfer Station..*
- Commercial recycling ordinance
  - *An unlimited volume of multifamily complex recycling and commercial recycling is allowed in the 2017-2024 proposed RFP contract.*
- Every-other-week garbage
  - *This is being considered in the 2017-2024 RFP solid waste contract.*

b. Waste Recovery—Suite of Strategies

Green

- Expand current partnerships with local businesses to collect waste cooking oil for biofuel production, and develop/expand markets for waste-to-resource products
  - *The City currently works with Central Market to collect waste cooking oil for biofuel production. The City could explore a partnership with Shoreline Community College to expand the scope of this existing work. As an illustration of what is possible, the City of Keene, NH used a federal grant to develop a public-private partnership that would use landfill gas to power a greenhouse aquaponics project, and in turn generate algae for animal feed and possibly biofuel production.*

c. Government Consumption and Solid Waste—Suite of Strategies

Green

- ✓ Increase percentage of recycled content in paper to 100% for color copies when possible
  - *This was recently completed.*
- Continue to expand recycling and organics collection services at City facilities and open spaces, and establish space with large containers to collect and recycle yard debris from Public Works and Parks operations at Hamlin Yard and North Maintenance Facility
  - *This would likely require additional Parks staff capacity to implement.*

TBD

- Select new electronics that meet Electronic Product Environmental Assessment Tool (EPEAT) standards and consider becoming an EPEAT purchasing partner when possible

- *This could be included as part of an updated Environmentally Preferred Purchasing Guideline/Policy.*

- Investigate the use of recycled asphalt shingles (RAS) or other recycled products in asphalt used for City paving projects
  - *Staff is exploring the feasibility of this strategy.*

E. BIOCARBON STORAGE AND NATURAL INFRASTRUCTURE

1. BIOCARBON AND NATURAL INFRASTRUCTURE GOALS: Sequester carbon and protect existing carbon stores through:

- **Increased natural infrastructure (trees, other vegetation, soil, and wetlands);**
- **Reduce impervious areas by agreed-upon number of acres or lane-miles; and**
- **No net loss of urban tree canopy.**

Climate benefit	Trees, wetlands, and natural infrastructure sequester carbon and protect existing carbon stores and make communities more resilient by helping to mitigate the urban heat island effect and reducing stormwater runoff. These climate benefits are not quantified in the Carbon Wedge analysis, which focuses on GHG emissions sources rather than carbon sequestration.
Resources needed	See notes below strategies for details.
Alignment	CAP and K4C.

a. Land Use and Planning—Suite of Strategies

Green

- Living Communities Partnership
  - *Cost depends on scope of partnership to be developed in conjunction with International Living Futures Institute*

Yellow

- Set a target to expand natural infrastructure through stormwater management
  - *By adopting the State Department of Ecology Stormwater Manual, the City currently evaluates projects for the degree to which they enhance natural infrastructure. The NPDES Permit is currently under review and through that process, or the proposed update of the Surface Water Master Plan, additional opportunities could be identified.*
- Consider policy requiring ecosystem benefits calculation in land use and infrastructure decisions
  - *The City would not need to take a leadership role in determining the formula for these calculations, but if such a system were available, the City could utilize it.*
- Ensure that stormwater and development codes require best management practices for soil, encourage natural infrastructure, and remove code barriers to natural infrastructure projects
  - *The City may not be able to initiate this strategy in the near-term, but could include it in the next update for the Surface Water Master Plan or a future packet of Development Code amendments. Removing code barriers could be more immediate, but would still require staff time to research and implement.*
- Acquisition, restoration, and management of undeveloped natural areas
  - *The ability of the City to execute this strategy would depend on specific opportunities for acquiring or restoring land, as well as a supportive funding mechanism. The City may wish to consider candidate sites in light rail station subareas as an initial priority if resources and opportunities become available. This could be further explored through the update to the Parks, Recreation, and Open Space Master Plan.*

b. Natural Infrastructure—Suite of Strategies

Green

- ✓ Natural infrastructure demonstration projects
  - *The City has a Green Streets Demonstration Project on 17th Avenue and many examples at City Hall and along the Aurora Corridor. Additional projects should be encouraged. Cost depends on project.*
- ✓ Incentives and mandates to encourage natural infrastructure
  - *The City has adopted the Department of Ecology Stormwater Manual, which requires use of Low-Impact Development (LID) techniques. The City's "Soak It Up" program also partially reimburses homeowners who install rain gardens or other natural infrastructure.*
- Track green building and natural infrastructure data in new permit tracking software

- *This opportunity should be considered as new software is evaluated.*

TBD

- Explore local applicability of Seattle's Green Factor score-based code requirement, which increases the amount and improves the quality of landscaping in development
  - *Staff needs to research, track results, and assess applicability of Seattle model.*
- De-paving initiative (existing development)
  - *Staff needs to research what program opportunities exist in Shoreline and the Seattle area to adapt this Portland-originated model.*

c. Soil Biocarbon Storage—Suite of Strategies

Yellow

- Encourage builders to comply with Washington State Building Soil guidelines for new construction, and provide education to improve and protect soil health on existing landscapes
  - *Leading scientists are still working to understand the role of soil biocarbon storage in mitigating climate change. Climate Solutions' Northwest Biocarbon Initiative is researching the best available science and working to make it accessible to cities and other stakeholders. Additionally, a University of Washington study found that adding 15-30% compost to soils resulted in a 50% reduction in stormwater runoff because of enhanced soil structure and improved moisture-holding capacity.*

TBD

- Amend City Green Building policy to require compost as soil amendment for landscaping, and promote bulk purchasing of organic fertilizer
  - *The City of Eugene, OR has adopted a policy requiring compost as a soil amendment City-wide.*
- Partner on City projects with companies that promote soil health
  - *This could be included in an update to the EPPG.*

d. Urban and Regional Forests—Suite of Strategies

Green

- Work with King County and other partners on initiatives, such as a transfer of development rights, that recognize the regional value of density in Shoreline

- *Shoreline is working with Forterra on a study regarding the regional ecosystem benefits of density. Council provided direction to proceed at their July 20, 2015 meeting.*

TBD

- Set tree canopy goals that consider carbon sequestration, resiliency to climate change impacts, and equitable distribution of tree-related benefits across the city
  - *Staff is exploring how to align these strategies with the Urban Forest Strategic Plan.*
- Seek funds to hire an urban forester and tree maintenance staff to oversee urban forest stewardship and coordinate community volunteers
  - *Staff is exploring how to align these strategies with the Urban Forest Strategic Plan.*
- Protect and expand healthy, climate-resilient urban tree canopy
  - *In general, large trees store more carbon, and a healthy tree canopy can help mitigate the urban heat island effect. Staff is exploring how to align these strategies with the Urban Forest Strategic Plan.*

e. Blue Carbon (Coastal and Riparian Wetlands)—Suite of Strategies

Green

- ✓ Policy to protect coastal wetlands
  - *Shoreline Master Program (SMP) includes guidelines and regulations for coastal wetlands.*
- ✓ Education on ocean acidification
  - *This is not technically a blue carbon/biocarbon strategy but represents an important coastal issue on which Shoreline has taken a stand by hosting a Sustainability Forum in 2012 with Jay Manning, a member of the Governor's Blue Ribbon Panel on Ocean Acidification. Additional opportunities for public education and action can be pursued.*
- Riparian planting and restoration
  - *Staff is exploring how to align these strategies with the Urban Forest Strategic Plan.*

F. MEASUREMENT AND VERIFICATION

1. MEASUREMENT AND VERIFICATION GOAL: Participate actively in King County-led activities to establish a system for measuring and verifying progress toward shared carbon reduction and energy goals

a. Measurement and Verification Strategy

Yellow

- ✓ Continue to implement the forevergreen initiative, and explore opportunities to partner with King County on related measurement projects to inform regional climate action
  - *In 2009 and 2012 the City performed carbon footprint analyses that informed the forevergreen site, and will need recurring staff resources to meet the commitment of updating this work every five years. The continuation of carbon footprint tracking and the forevergreen initiative will be valuable as King County and the K4C explore a public-facing dashboard as a regional collaboration. Staff will track how these efforts relate and how to leverage Shoreline's leadership on forevergreen most efficiently.*

III. RECOMMENDED PRIORITIES

These recommended actions represent a distillation of the strategies that are: most likely to result in significant carbon reduction; opportunistic regarding existing or expected partnerships, such as the K4C Joint City-County Climate Commitments; and supported by City staff. They are organized according to the following categories:

- Top Recommendations for City Council Advocacy
- Top Partnership Activities
- Top Local Activities that Require Full Implementation through Council Direction or Allocation of Resources

Top Recommendations for City Council Advocacy (8)

- Carbon Pricing
  - Advocate for statewide carbon pricing
- Fossil Fuel Export
  - Participate in the Safe Energy Leadership Alliance
- Transportation
  - Continue to advocate for statewide Clean Fuels Standard
  - Advocate to increase transit service 100% by 2030 and 200% by 2050 (or set other time-specific targets for transit increase)
  - Advocate for Seattle City Light to embrace a leadership role in EV adoption
- New Buildings
  - In partnership with the Regional Code Collaboration, advocate for the State of Washington to outline and adopt a code pathway for new buildings in 2031 to be 70% more energy efficient than new buildings were in 2006, and to create a stretch energy code program for cities
- Existing Buildings and Renewable Energy

- Advocate for state funding for local/regional energy efficiency programs
- Participate in K4C outreach to utilities on energy efficiency and renewable energy

Top Partnership Activities (8)

- Transportation
  - "Plug-in-Ready" partnership to enable private adoption of EVs
  - Partner with King County and nonprofits to encourage shared transportation in vanpools, rideshare, carshare, and fleetshare
- Buildings and Renewable Energy
  - Partner with Seattle City Light and Community Power Works on an energy efficiency retrofit program, with emphasis on building envelope and heating technology measures to reduce natural gas consumption
  - Partner with Northwest SEED, NW Mechanical, Shoreline Community College, and Solar Shoreline on a Solarize campaign to install solar on rooftops of homes and businesses, with emphasis on measures to reduce natural gas consumption
  - Partner with Northwest Solar Communities on standardization of solar installation process
- Consumption and Solid Waste Management
  - Continue to partner with King County at regional Metropolitan Solid Waste Management Advisory Committee (MSWMAC) meetings
  - Partner with King County on Food Too Good to Waste campaign
  - Partner with King County, Diggin' Shoreline, Seattle Tilth, and others on Farm City Roundtable

Top Local Activities that Require Full Implementation through Council Direction or Allocation of Resources (20)

- Council Priority
  - When setting 2016-2017 Council Goals, incorporate climate and emission reduction targets
- Transportation—*A number of these strategies are being addressed through Light Rail Station Subarea Planning.*
  - Research examples of pricing policies to reduce VMT in other cities, and determine best practices, factors for success, and local applicability
  - Aggressively target grant funding for capital projects, land use, and non-motorized transportation
  - Adopt and implement a Transit Communities Policy to align planning and zoning for transit supportive development within walking distance of high capacity transit
  - Reduce cost and uncertainty of project review in Transit Communities

- Utilize zoning and permitting methods to concentrate new growth in proximity of services and transit
- Implement Transit-Oriented Development Community Engagement
- Implement Transit, Pedestrian, and Bicycle components of the Transportation Master Plan, including developing cycle tracks and greenways within the city with connections to and through densely populated neighborhoods
- Adopt a transportation budget prioritization tool using Triple Bottom Line (TBL) assessment, which includes social and environmental factors as well as traditional financial performance

- Buildings and Renewable Energy
  - Building on the 2015 completion of a district energy study, Council-directed plan for community-wide distributed renewable energy
  - Consider creating a permanent position related to sustainability and climate action, such as a Community Resource Conservation Manager to support residential and commercial energy efficiency and renewable energy projects
  - Develop a package of strategies for sustainability and carbon reduction in the City's existing and new utilities
  - Work with Seattle City Light to continue converting streetlights to LEDs
- Consumption
  - Use mini-grant program and 2015 Communications Strategy to promote sharing, lending libraries, repair education, and outreach on household consumption choices
- Solid Waste Management
  - Require solid waste collection, and embed collection of food scraps and yard debris in future solid waste contracts
  - Adopt King County's recycling goal, and approve a new solid waste contract that: 1) encourages conscious consumption, and 2) offers services that maximize waste recycling and reuse throughout the community
  - Expand current partnerships with local businesses to collect waste cooking oil for biofuel production, and develop/expand markets for waste-to-resource products
- Biocarbon Storage/Natural Infrastructure
  - Work with King County and other partners on initiatives, such as a transfer of development rights, that recognize the regional value of density in Shoreline
  - Protect and expand a healthy, climate-resilient urban tree canopy to store more carbon and mitigate the urban heat island effect
  - Encourage builders to use soil best management practices in new construction, and provide education to improve and protect soil health on existing landscapes

IV. CONCLUSION

New Energy Cities' analysis indicates that the strategies outlined in this memo, based on best practices known today, are likely to result in significant carbon reduction in the areas of transportation, buildings, and energy supply. Supplementary actions in the areas of biocarbon storage, consumption, and solid waste will also have important climate and non-climate benefits.

Current analysis indicates that if the City of Shoreline were to achieve all of the targets in this memo, through a mix of advocacy, partnerships, and local action, and if Washington State were to adopt carbon pricing, it is likely that the Shoreline community would meet the overall 50x30 goal.

If the City of Shoreline were to implement the green and yellow strategies, it would make significant progress toward achieving the 50x30 goal. However, implementation of the green strategies alone (i.e., those already underway or ready for implementation in the next year) will not be sufficient. Moreover, the City does not have staff capacity to implement all green strategies in the near term, and will have to prioritize the most important strategies and/or allocate additional resources.

We recommend that the City place a high priority on fully funding and implementing the green strategies, as well as identifying the resources necessary to implement the yellow strategies, which have specific obstacles or conditions that must be in place to start, such as new resources, tools, partnerships, or outside opportunities. Although the City may opt for a later implementation timeframe, such as two to six years out, for yellow strategies, we recommend that the City begin to lay the foundation now for their successful implementation.

For both green and yellow strategies, the first foundational steps could include:

- City Council adoption of community-wide carbon reduction as a new Council priority at the 2016 Council retreat;
- City Council engagement on prioritization and implementation of these strategies;
- City Council advocacy at the regional and state levels for the most leveraged policies related to community carbon reduction, including but not limited to the K4C Joint City-County Climate Commitments;
- Participation in regional partnerships that will drive community carbon reductions in areas that are outside of the City's traditional authority;
- Identification of existing and/or new staffing resources to execute the most leveraged strategies for community carbon reduction; and
- Allocation of budgetary resources for new program elements.

As a natural part of implementation, the City will also need to:

- Evaluate the effectiveness of strategies over time, including examination of improvements in technology, positive market changes, and unexpected program efficiencies.
- Adapt to both positive and negative developments over the course of implementation, and adjust its strategies accordingly in order to meet its sector targets and the overall goal.

The City can use its ongoing carbon footprint analyses and forevergreen website to track and report progress of these initiatives over time.

Shoreline and New Energy Cities staff looks forward to additional guidance from Council on next steps, which could include a Council workshop for more detailed discussion of options and implementation strategies.

V. APPENDIX—COMPARISON OF K4C JOINT CITY-COUNTY CLIMATE COMMITMENTS & PROPOSED SHORELINE CARBON REDUCTION TARGETS

Category	K4C Commitments	Proposed Shoreline Carbon Reduction Targets
Shared Goals and Climate Policy	▪ Adopt science-based countywide GHG reduction targets that help ensure the region is doing its part to confront climate change ▪ Support strong federal, regional, state, countywide, and local climate policy	▪ Shoreline adopted science-based, measurable targets in its 2012 Climate Action Plan ▪ Support strong federal, regional, state, countywide, and local climate policy, including a science-based limit on carbon, and a carbon pricing approach that charges emitters for GHG pollution
Transportation	▪ 15% reduction in vehicle carbon fuel intensity due to proposed 10% statewide clean fuels standard (CFS) and 5% additional reduction ▪ 20% reduction in vehicle miles traveled	▪ 25% reduction in carbon intensity of private vehicles by 2030, by promoting clean transportation fuels and vehicle technologies (including 10% statewide CFS) ▪ 35% reduction in vehicle miles traveled by 2030
New Buildings	▪ Achieve net zero GHG emissions in new buildings by 2030	▪ Achieve net zero GHG emissions in 100% of new buildings community-wide by 2030
Existing Building Retrofit and Renewable Energy Supply	▪ 25% reduction in existing building electricity use, and 25% reduction in direct natural gas use for heating in existing buildings ▪ 90% renewable electricity use (20% more than 2012 level), phase out coal-fired electricity by 2025, and limit natural gas-based electricity generation to current level	▪ 40% reduction in natural gas use for heating by 2030 ▪ Seattle City Light already has 90% renewable electricity, and since 2000, has had a mandate to meet all new electrical demand with cost-effective conservation and renewable energy resources, and to achieve zero net GHG emissions

August 27, 2015

RE: City of Shoreline
District Energy Overview and Development Opportunities
(DRAFT)

PUTTMAN INFRASTRUCTURE

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The objective of this memo is to provide the City of Shoreline a general understanding of district energy and its potential value, identify potential locations for district energy in the city, provide an overview of district energy development phases and development models, and provide specific recommendations for initiate district energy development in the city to support future development.

Section 1 – District Energy Introduction

Overview

Much infrastructure development of the past century focused on large, centralized, single purpose systems. These systems were highly effective for promoting economic development, public health, and environmental quality in rapidly growing urban areas: these systems will continue to play an important role in cities. However, aging infrastructure, the densification and expansion of cities, new fiscal constraints, new technologies, and changing societal values are calling for an expanded toolkit to optimize infrastructure and meet sustainability objectives. Not as a replacement of centralized systems, but as an alternative or complementary strategy to address new challenges and seize new opportunities.

Sustainability demands creative and flexible solutions that are sensitive to local context and that produce real improvements in service quality and resource efficiency. In recent years, the focus has been on building-scale alternatives to centralized infrastructure – high efficiency to net-zero green building – but buildings are not always the most appropriate or cost-effective scale to promote sustainability. District energy systems—neighborhood-scale utilities that deliver heating, cooling, and/or hot water—are emerging as a

key strategy for cities that are pursuing aggressive environmental goals, including massive long-term reductions in building-related greenhouse gas emissions.

Buildings are part of a community, and resource sharing is a common practice in communities, from sharing public spaces to water to electricity grids. Cities and building owners will be compelled to look to district-level solutions to meet their clean energy needs, and to meet their needs around other resource and infrastructure issues such as sustainable storm water management and waste water recycling. The aggregation of energy demand and the customer service model established for district energy can serve as the foundation for these other "eco-district" services and infrastructure projects.

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About District Energy

District energy is a very old concept used as far back as the Romans. District energy helped the initial development of the electric power industry by enhancing the economics of new power plants by generating additional revenue from waste heat recovery. Today, more than 50% of all building stock in countries of Northern Europe is connected to district systems. In Stockholm, Sweden, for instance, the entire city of more than 800,000 people is served by two systems. As they incrementally expanded to serve more people, these systems added new sources of energy. With such systems, technologies tend to evolve on a regular basis, approximately every 15 to 20 years.

Based on 2005 information from the International District Energy Association (IDEA), the U.S. and Canada had about 650 district systems in operation, though a number of systems have begun operations since then. Of this number, more than 75 percent serve either university or hospital campuses, while the remainder serve portions of downtown urban areas. These district energy systems provide energy to about 10 percent of non-residential spaces in the U.S.

District energy refers to the central provision of heating and/or cooling services within a defined service area. Electricity is sometimes also produced as part of a combined heat and power (CHP) system (also referred to as cogeneration).

As shown in the exhibit below, there are three main components to a district energy system.

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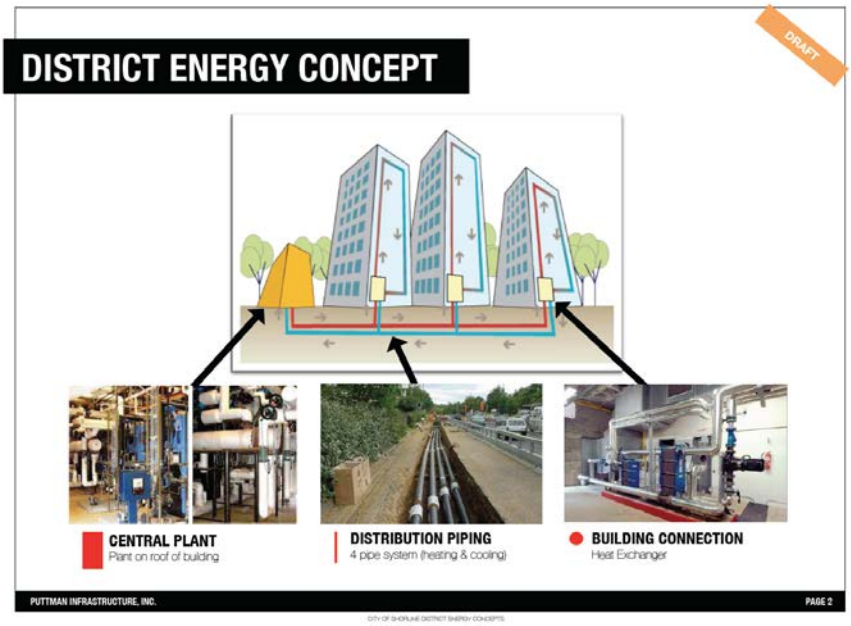

Central Energy Plant (CEP)– One or more energy-producing plants provide all of the heating and/or cooling energy required by customers within the defined service area. A single, central plant offers significant economies of scale compared to individual systems within every building, and simplifies system design and operation. However, several plants may be better in certain circumstances, notably where development is slow and/or dispersed, or where different energy sources are being integrated in different locations.

Distribution Piping System (DPS) – Hot and cold water are distributed to individual customers via underground pipes (one supply and one return pipe each for heating and for

cooling). While older district heating systems distributed energy in the form of steam, newer systems almost all use hot water distribution. Systems often grow out of central distribution line, with smaller loops that link buildings together.

Energy Transfer Station (ETS) – Individual buildings are served via energy transfer stations (ETS) consisting of heat exchangers and meters, eliminating the need for on-site boilers in the case of district heating and chillers, or cooling towers in the case of district cooling. Within buildings, thermal energy must be provided to individual spaces by hydronic HVAC systems, which could include fan coils, hydronic baseboards or in-floor radiant systems.

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In order to deliver district energy services, some form of utility service provider (e.g., a local government or a privately-owned utility), assumes responsibility for capital investments (i.e., construction), and secures (i.e., generates or captures) and delivers energy that meets the end users' needs, and ultimately charges building owners for use of the system. A utility is simply an entity that plans, invests in and operates the infrastructure required to deliver services and recover costs, both capital and ongoing operating costs, whether through user rates or other funding mechanisms.

Benefits of District Energy

District energy systems have the potential to generate numerous benefits to the City of Shoreline as well as the owners and tenants of the buildings connected to the system. Making sure that energy consumers and building owners understand the ways that district energy directly benefits them is critical. Of course many of these benefits overlap with those of communities—what is good for owners is good for communities, and vice versa. Nevertheless, in order to engage the participation of owners and tenants, cities need to analyze and articulate how district energy benefits the community as well as building owners and tenants through key

metrics like energy efficiency, cost savings, and risk management over the long term.

Community benefits include:

Increased Energy Efficiency and Reduced GHG Emissions
District energy systems can produce significant energy savings – up to 20 to 30% - compared to stand alone building systems due to load diversification, equipment "right-sizing" and operational efficiency. Enhanced efficiency reduces energy-related GHG emissions while also providing opportunity for greater emissions reductions by shifting to cleaner energy sources over time.

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Improved Resiliency and Risk Mitigation
District energy systems increase community resiliency by providing distributed energy solutions that reduce risk in terms of future energy and environmental policy, carbon costs, fuel availability and cost variability, and the future effects of climate change.

Partnership and Investment Opportunity
As a commercially viability investment, district energy provides cities the opportunity to partner with the private sector to begin non-tax based investments into the city to realize both policy and development objectives.

Building benefits include:

Reduced Energy Costs and Cost Stability
The bottom line for any building owner is cost. Long-term net cost savings are a key selling point of district energy systems. District energy delivers lower cost energy through improved efficiency, load diversification, and economies of scale. Also due to the long-term aggregate nature of demand, a district energy system operator can negotiate

long-term fuel contracts, which facilitates greater energy price stability for consumers.

Increased Cost Effectiveness

District energy enables incentives and financing that would not otherwise be available. District energy systems can attract sources of financing, such as municipal bonds or community energy grants, which are not available to individual owners. The cost efficiencies gained with district energy utility can in some cases create enough of a revenue premium for cities to offer incentives to owners of existing buildings for installing systems compatible with district energy and connecting to the system. This in turn can enable owners to take into consideration the full spectrum of options for replacement of heating and cooling equipment without having to bear a first cost premium.

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Enhanced Energy Efficiency and Greener Energy

Buyers and renters are becoming more and more aware of the energy performance of existing buildings, which makes energy efficiency a source of either opportunity or risk for owners, depending on how well their buildings compete. Cities are now adopting new policy initiatives around energy performance ratings and disclosure to accelerate the degree to which market forces will distinguish efficient buildings from those that use too much energy. Some cities, like Seattle and Vancouver, B.C., are already moving beyond disclosure policies toward regulations that will require buildings to meet aggressive post-retrofit energy targets in return for flexibility to innovate in how they achieve such targets, including use of on-site renewable generation equipment and/or low-carbon district energy sources. District energy offers an essential opportunity to owners in this emerging policy environment.

Reduced Building Operations & Maintenance Responsibility and Cost

With district energy, building owners receive reliable and predictable energy service from professional system operators. This means fewer worries for building management staff, in terms of fuel price uncertainty and system maintenance, upgrade and repair, compared to on-site systems.

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Future Technology Benefits

District energy allows cities and building owners to "fuel switch" over time to take advantage of new clean energy technology options and access capital financing for these fuel/technology upgrades.

Determining the Potential Value Proposition of District Energy

The value propositions, costs and risks of district energy must be weighed in project-specific business cases that consider the unique features and local context of every project. The ultimate business case for district energy will depend upon a number of criteria including:

- The ultimate scale of the expected system
- The density and mix of loads (higher density and greater use mix will typically results in greater ratio of benefits to costs)
- The actual rate and staging of development
- The security of loads (requirements or incentives for customers to connect and consume)
- The options for on-site energy systems (many building sites may be limited in terms of their ability to access alternative energy sources such as solar orientation or available scape and suitable ground conditions for geoexchange systems)
- The availability and cost of alternative energy sources (eg, large nearby waste heat sources, local underutilized biomass resources)

- Potential synergies with other infrastructure (eg, as sources of waste energy and/or in the installation and maintenance of equipment).
- Other opportunities for future growth or the addition of other services (sometimes referred to as "growth options" in the finance literature).

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Section 2 – District Energy Opportunities in Shoreline

Subarea Plan Nodes

Development of district energy in the City of Shoreline should be closely aligned with City planning activities. As development scale, phasing, mix of uses, and load certainty are significant drivers associated with successful district energy development, subarea planning nodes lend themselves to initial areas of consideration within the city.

The City of Shoreline Comprehensive Plan identifies six subarea planning areas - areas that the City will focus significant investment of public resources to both direct and support future development within the city of the next 20 years. In addition to these, the City is currently developing a Subarea Plan for land use surrounding the future 145th Street Station.

Adopted Shoreline subareas are shown in the following exhibit:

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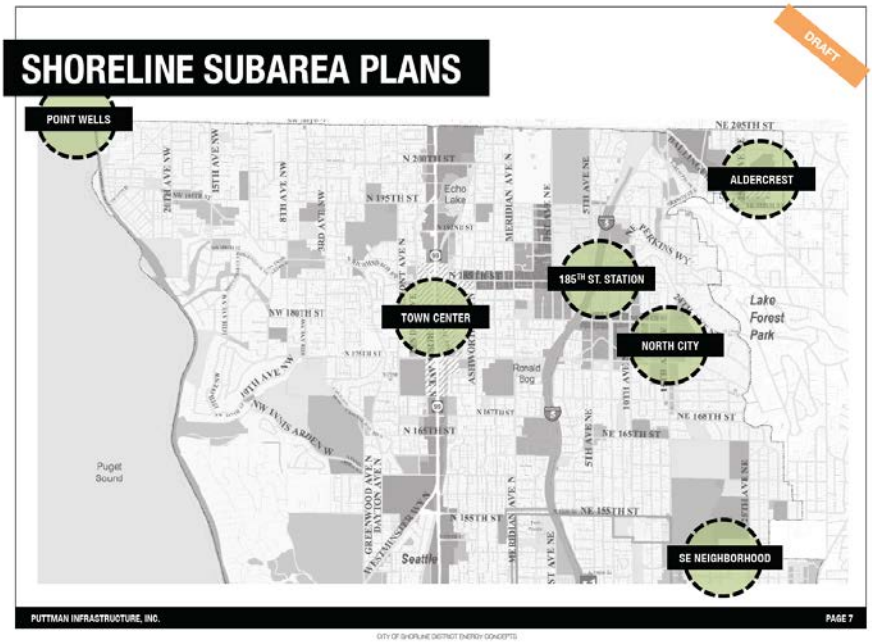

From the perspective of district energy, Shorelines subarea planning nodes lend themselves to the following district energy opportunity types:

Type 1 - Catalyst Node

Catalyst nodes are planned for intensively focused development such as transit orientated development associated with future transportation infrastructure (ie, light rail). Catalyst nodes may also be associated with existing city centers or new master planned development. The intensity of development and diversity of development of a catalyst node create ripe opportunity for district energy infrastructure.

Catalyst nodes in Shoreline include:

- Town Center
- 185th and 145th Street Station Subareas
- Community Redevelopment Area at Aurora Square
- North City
- Point Wells

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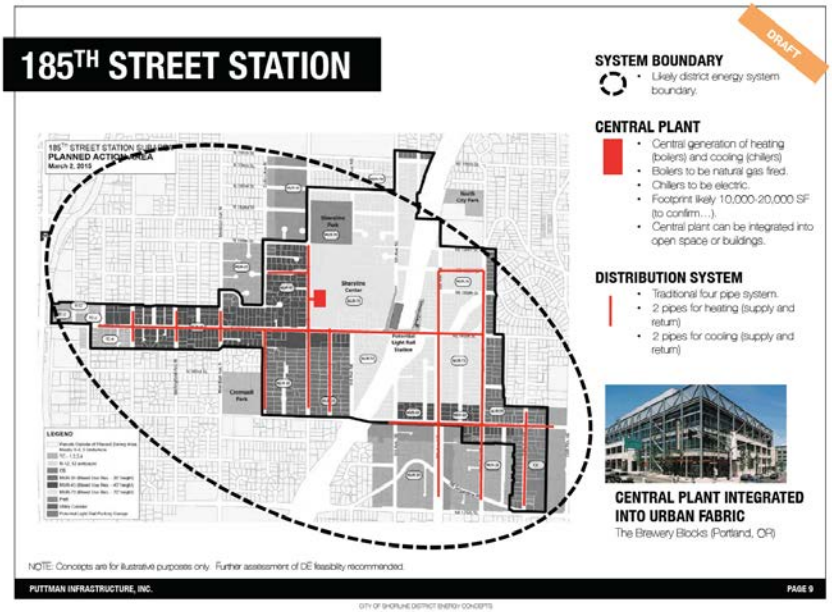
Type 2 - Traditional Infill

Less intense in focus than a catalyst node and with less major infrastructure investments such as light rail, traditional infill still has the potential to support district energy, but will require more supportive City policy, regulations, and investment.

Traditional infill nodes in Shoreline include:

- SE Neighborhoods
- Aldercrest

Shoreline should focus attention on catalyst nodes initially as it considers developing district energy in the city. An example of a potential district energy concept to serve the 185th St. Station subarea planning node is provided below:



Section 3 – District Energy Implementation

Phases of District Energy Development

As illustrated in Page 10 – Phases of District Energy Development, district energy development may be divided into the following main phases:

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Phase 1 – Advocacy, Vision and Policy Development

This work actually precedes the development cycle, nevertheless, it is vital. Many people — even energy experts who work for utilities — consider district energy an "old, outdated" technology whose time has come and gone. If this approach is to once again receive serious consideration, these sorts of misconceptions need to be addressed and debunked.

Phase 2 – Feasibility (Screening, Pre-Feasibility and Feasibility)

This is the pre-feasibility screening and feasibility work required to confirm the basic technical and financial viability of a particular district energy project. As Table 1 makes clear, there are a number of important steps in this phase and it requires both financial and technical/engineering expertise.

Phase 3 – Detailed Investment Analysis

This is an extension of full feasibility, but includes making decisions about ownership and financing details, as well as securing customer commitments.

Phase 4 – Development

This is the design, permitting, construction and commissioning work.

Phase 5 – Operations, Maintenance and Expansion

This involves operating, maintaining and expanding the system after it is commissioned, and changing fuel sources if necessary and prudent.

District Energy Players - Roles and Responsibilities

As shown on Page 11, there are eight key players in the process of district energy development. The following pages describe key player roles and responsibilities:

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District Energy Advocate

This is the general advocate and source of information about district energy. Usually a government or nonprofit organization educates the general public about the benefits of district energy, articulating and promulgating the vision to build support. This entity also engages public agencies and industry representatives to encourage supportive public policy. The main U.S. advocate is the International District Energy Association.

Facilitator/Convener

This role is essentially the City-designated district energy "champion." This is an extremely important role, because the economic benefits of a municipal-scale, multi-stakeholder district energy system are often too dispersed to motivate any one self-interested party to drive the process. Because district energy benefits accrue to the public as well as the private sector, individual private actors tend not to take on this time-consuming and expensive facilitation role. As a result, without a strong facilitator driving the process, even an economically viable project can easily fall by the wayside.

Pre-Feasibility and Feasibility Consultant

The pre-feasibility consultant looks at a specific location with regard to current and projected energy and population density, as well as prevailing and projected energy costs,

and tries to determine whether or not there is a realistic opportunity for district energy in that area.

A feasibility consultant builds on the pre-feasibility study and prepares a comprehensive study that looks at site-specific energy intensity data, possible right of way alignments, specific sites for energy plants, neighborhood traffic patterns, and various potential technologies to determine whether or not a district energy project makes sense in a specific location. It also analyzes the business and technical case, including a pro forma, sensitivity analysis, thermal plant location options, and an analysis of the environmental benefits of various technology options and fuel sources. This work is typically funded either by a public sector entity that wants to maximize public benefits from a project, or by a project developer who hopes to develop the project and has a reasonable expectation of doing so.

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Project Owner

This entity owns the district energy system physical assets. Owners are typically either public, private or a hybrid blend. There are also a few district energy cooperatives. Private Franchisee/Owners are often linked to and/or backed by large financial institutions such as investment banks or pension funds. Sometimes systems have multiple owners (e.g. joint ventures and public-private partnerships) and ownership lines are often split between the energy center and the distribution network.

Project Developer

The project developer delivers the physical assets, such as the energy center and/or the distribution system to the owner/financier. In some cases, project developers have a limited period of engagement with the project, as they focus on winning the development contract, and then designing and building the physical assets. Developers tend to be

very bottom-line focused and deadline driven, because they generally succeed by limiting their risks and costs, and by completing high quality projects on time and on budget. In some instances a developer will also choose to be the long-term owner and operator (see below), but this is not always the case.

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Project Operator

The district energy operator is responsible for the ongoing technical operation and maintenance of the district energy system. As already noted, this entity is sometimes also the Developer and the Owner. For example, Veolia Energy North America purchased, rather than developed, most of their American district energy systems, and in some cases they operate district energy facilities that are owned by others.

Regulators

Regulators establish and monitor standards of construction, operational performance, safety and pricing/consumer protection. They also ensure compliance with standards and other applicable laws.

District Energy Ownership and Operating Models

There are four ownership and operating models utilized to develop and operate district energy systems.

The Municipal Model (Public)

Public district energy companies are typically owned and governed by the local municipality. The City either establishes a full-fledged district energy department to manage the system, or it creates a separate, wholly owned and operated subsidiary to shield the municipal general fund from direct and unlimited financial liability. Although the City or a subsidiary usually owns the district energy company under this model, the technical design, construction — and

possibly even the operation — is often contracted out to private firms.

For example, a private developer backed by private investment funds might use a traditional project finance structure to build the system. This might involve a Special Purpose Vehicle (SPV) to finance and develop the system that, once completed and fully operational, could be transferred to City full ownership and control. The City would thereby shed the construction risk and purchase the completed system with low-cost bonds secured either through contracted energy purchase agreements or by the full faith and credit of the City. In either case, the City would repay the relatively low-cost bonds over time.

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In other municipal examples the system build-out occurs over many years, so there is not a simple design-build phase followed by a bond financing phase. The municipal utility in such cases will require an ongoing source of new design-build capital. This may take the form of a revolving capital pool that is continually replenished by an expanding base of ratepayers.

Strengths of the Municipal Model:

- City procurement guidelines, along with long-term ownership, ensure control and close alignment with City goals, including social and environmental policies.
- Development risk can be transferred to a third party via a Special Purpose Vehicle, as described above.
- City controls zoning and building permits, so can create incentives, lower the cost of capital, and prioritize sustainability, efficiency, and carbon performance.
- City ownership enables provision of lower-cost long-term financing compared to private sector borrowing.

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- Operating profits would flow back to the City and support the delivery of other services. While this is a positive outcome, there is also the potential for losses.
- System expansion or modification can be encouraged, coordinated and controlled by the City.
- City may have access to grants not available to private sector owners.
- City may recover some costs from taxes rather than customer rates if there are broader public benefits from the project and costs exceed private benefits (sustainable rates) or to minimize revenue risks from voluntary-only participation.

Weaknesses of the Municipal Model:

- Long-term financing costs are reliant on the financial strength (i.e. the credit rating) of the City, and project debt will remain on the City balance sheet.
- The City carries the long-term debt, and arguably might discourage energy efficiency investments that could reduce its income from energy sales.
- Without a clear commitment to finance expansion and renewal, the system may not reach its full (sustainable) potential and stagnate.

The Private Model

A number of private companies develop, own and/or operate district energy systems. Most of these firms are relatively unknown; however, in Europe and Canada, several very large investor-owned utilities have entered this market, either directly or by buying a stake in a specialist company and providing solid financial backing, but there are still relatively few U.S.-based utilities in this space.

Private companies can arrange external debt financing, but building owners and/or the project developer sometimes may need to make an equity contribution to the project.

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More common is a connection fee that is required upon connecting to the system. Building owners are sometimes required to make long-term commitments to purchasing energy for no less than the projected or actual "business as usual" price of energy from more traditional sources. This way the district energy developer can model incoming future cash flows with a reasonable degree of certainty. Sometimes interested public entities also must supply gap financing, especially for distribution systems in areas with relatively few initial customers. This gap financing may be justified on the basis of broader public benefits.

Strengths of the Private Model:

- The private company and its backers typically carry most, if not all, of the financial risk.
- The private company brings substantial expertise to the project with extensive project finance skills, project management experience and technological knowledge, all of which enables them to carry the technical performance risk.
- The developer will continue to own and/or operate the system over the long term, so a City will not have to handle maintenance or operations.
- A private utility will typically continue to capitalize the business for expansion and renewal.

Weaknesses of the Private Model:

- Relatively high rates of return are required to compensate for developer risk, so energy charges may be higher.
- Unless there is a very strong business case, privately-financed projects often need at least some public support, whether in the form of policies that reduce development risks and barriers or incentives and financing support in recognition of broader public benefits.

- Public sector stakeholders have more trouble exerting control and are less able to direct future development of privately-owned projects, particularly those with a lower rate of return.
- The details of a City franchise agreement are extremely important, because customers will be tied to a private company with near-monopoly control, and depending on the type of system that is developed, it could be exempt from Public Utility Commission (PUC) oversight.

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The Hybrid Model (ie, Public Private Partnership)

Various hybrid structures, some of which are known as public-private partnerships, may be established in order to share financing, development, ownership and operating risks and functions. The hybrid model — which is actually a "family" comprised of dozens of possible configurations — also shares decision-making power/control between the public and private sectors while still allowing the district energy developer to access capital at the lower interest rates available to the public sector. Hybrid approaches offer tremendous flexibility and the opportunity for innovation in creating a unique ownership/ operating structure.

Several discrete elements of a project can be "hybridized":

- Financial Ownership. For example, a typical joint venture combines all of the assets into a single entity and splits ownership of that entity between the owners.
- Hard Assets. This is not really a joint venture, as actual assets are not shared. An example might be a system where a one entity (typically, but not always, a municipality) owns and maintains the thermal distribution system, while a private company owns and operates the energy center.

- Operations, Maintenance and Upgrades. Operations and maintenance can be outsourced via a simple operating agreement. Alternately, a more comprehensive and longer-term concession agreement might also include outsourced responsibility for funding system upgrades and expansions.

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One possible hybrid arrangement is for public entities to handle the financing, construction, operation and maintenance of a thermal distribution (piping) system, while the central plant is handled by one or several different private entities. The municipality would manage the energy distribution system since its installation because ongoing maintenance and extension requires tearing up the streets, an activity that municipalities already know how to manage. This work can be closely coordinated with other public utility repairs within the public right-of-way. The thermal distribution and/or other components of a system could also initially be financed, owned and operated by a municipality but later sold off once the system is established and its financial viability is clearly demonstrated.

Strengths of the Hybrid Model:

- City still controls zoning and building permits, so can create incentives to connect — and thereby influence — the cost of capital.
- Can readily be influenced by the City procurement process and regulations to pursue efficiency, carbon performance, the use of locally-sourced renewable fuels and rapid expansion into new or redeveloping neighborhoods.
- Greater flexibility in terms of financing sources and risk allocation than either wholly-public or wholly-private approaches.
- Sometimes provides access to low-cost, public-sector borrowing rates.

- May reduce political risk for elected officials supporting district energy projects.

Weaknesses of the Hybrid Model:

- The public sector (i.e. the taxpayer) often still assumes some financial risk.
- Liabilities are sometimes, but not always, reflected in public sector accounts.
- Process requires compliance with (potentially cumbersome) public sector procurement procedures.

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The Cooperative Model

Cooperatives (co-ops) are also sometimes known as stakeholder-owned Special Purpose Vehicles, because ownership is shared among the co-op customers. Key stakeholders are typically customers receiving the energy, like commercial buildings and/or residents within a defined location and local public agencies.

Strengths of the Cooperative Model:

- Because the owners are also customers, this structure is likely to offer maximum accountability and transparency.
- Co-op structures can enable projects in areas with limited access to capital by securing relatively small amounts of capital from many different owners/customers.
- By owning the network that serves them, co-op members reduce the risk of monopoly abuse.
- Offering outside entities an ownership stake can help fund expansion and attract more members.

Weaknesses of the Cooperative Model:

- Decision-making can be cumbersome for cooperatives, since ownership is divided across many stakeholders that may have disparate interests.
- A co-op may lack the expertise that a private firm can offer through a private or hybrid model.

- It may be difficult to utilize the co-op model in newly developed areas without an established base load. This model may work best for purchasing existing district energy infrastructure, rather than building new facilities.

Challenges to Implementing District Energy

There are normally many potential challenges to overcome as well. Some key challenges include:

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Building Developer/Owner Buy-In

The most critical challenge to district energy development is building developer/owner buy-in (ie, will they choose to connect?). Detailed financial analysis will provide these future customers with the necessary information to make informed decisions. Moreover, having the City backing the system will provide additional certainty of energy service and cost now and into the future.

Staging of Capital Investments

Some district energy capital investments are "lumpy" and must be staged carefully to minimize carrying costs prior to securing energy service revenues and to minimize stranded investment risk. One strategy to reduce these risks includes interim reliance on temporary or permanent natural gas boilers, which can then be used for peaking and back-up once loads reach sufficient levels to support investment in alternative technologies for baseload supply.

Energy Revenue Risks

Customer capture and retention is critical to ensuring economies of scale while minimizing the risk of stranded capital. Often communities and stakeholders play a critical role in mitigating these risks through vision and policy support.

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Project Financing

District energy offers stable, utility-style returns. However, there is a need to finance pre-implementation feasibility studies and design work for new systems. New systems will also typically need a "levelized rate" structure whereby expenses may exceed revenues in early years. Additional capital will be required to finance operating deficits in early years, which would be repaid through surpluses in later years of the investment cycle. Multiple sources of financing may be required to reflect the mix of public and private benefits. For example, customers may pay a small premium over conventional heating and cooling systems to reflect intangibles such as higher reliability, better service, reduced risks, and better environmental performance. But the willingness of private customers to pay for societal and long-term benefits such as deep carbon reductions and technological flexibility may be limited. Other sources of capital will be required to maximize these societal benefits.

Planning and Coordination

Considerable coordination among land use and infrastructure planning is required to minimize implementation costs, secure energy production sites, and secure certain alternative energy sources such as waste heat. Building codes and enforcement can be used to promote voluntary connection and ensure system performance. Careful coordination with building developers and designers is required to ensure optimal system compatibility.

Supply and Price of Alternative Technologies and Fuels

Supply chains for some alternative technologies and fuels are not yet well developed, and there may be both supply and price risks compared to well-established conventional fuels. These can be managed in part through competitive procurement processes, performance contracting, and the staging and diversification of technologies. Governments

may also have a role to play in facilitating market development for technology and fuel suppliers, as well as access to resources such as waste streams and heat recovery opportunities.

Electricity Market Interface

The primary focus of district energy is on the provision of thermal energy service (heating and/or cooling). Combined heat and power can reduce district energy costs and enhance the efficiency and security of the local electricity system. However, investors will often require long-term and stable power prices to finance the additional costs of CHP. Alternatively, electric utilities or independent power producers may need to build, own and operate the plants including the management of electricity supply contracts, and then sell waste heat to a district energy provider.

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Section 4 – District Energy Development Recommendations for Shoreline

Recent district energy development efforts in Portland, Oregon and Seattle, Washington initially began as private development models where the City engaged with a third party district energy provider through a competitive, public procurement process. However, based on the results of these initial efforts, it became evident that the third party district energy providers needed some type of partnership with cities – either financially or policy wise – to ensure commercial viability for the district energy system. As a result of these recent efforts, it is recommended that the City of Shoreline pursue a public private partnership (P3) development model to implement district energy within the new 185th Street Station Subarea.

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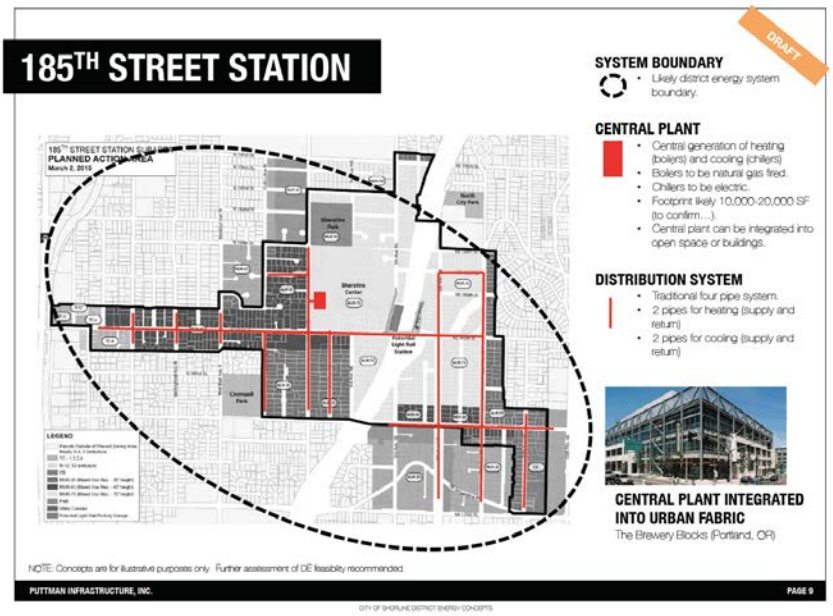

A P3 development model for implementing district energy in the 185th Street Station Subarea would require the City of Shoreline to engage with an experienced third party district energy provider (DE Provider). The terms of the P3 would likely include the following:

185th Street Station DE P3 Development Model (Example)

Ownership:	City/DE Provider
Funding:	
Central Plant:	DE Provider
Distribution Network:	City
Design/Build/Operate:	
Design/Build:	DE Provider
Permit:	DE Provider
Policy Support:	City
Operations:	DE Provider
Customer Relationships:	DE Provider

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The City and DE Provider would jointly own the district energy system. Each partner would be responsible for financing specific components of the system consistent with financial return needs and risk profiles. This would likely result in the City financing the distribution piping network – to be constructed with public street improvements – and the DE Provider financing the central plant – based on the timing of heating and cooling energy growth within the district. The DE Provider, utilizing their expertise and experience, would design/build/permit the system as well as operate and manage customer relationships. The City would support system development through the creation of support policies such as mandatory connection requirements for each building developed in the district to connect to the district energy system. Revenue generated from the district energy systems would be shared by the City and DE Provider based on the capital and risk invested into the system.

Other Partner/Stakeholder Engagement

In addition to the P3 development model recommended above, it will also be important to engage with key stakeholders early in the district energy system development process to ensure support. These stakeholders include:

Property Developers/Owners

Early in the process, property developers and owners should be engaged in order to promote system acceptance.

PSE (electricity and natural gas)

Puget Sound Energy should be engaged early to help shape system development, including potential incentives and other forms of support.

Regulators (Washington UTC)

The Washington Utility and Transportation Commission (UTC) should be engaged early as well to understand permitting requirements including specific requirements of the UTC related to developing district energy systems under a P3 development model.

Local NGOs

Local non-profits should be engaged to foster support for the district energy system as a means to accelerate sustainability nationally and in the Puget Sound region and Shoreline.

Recommended Next Steps

PUTTMAN INFRASTRUCTURE

Development will drive district energy implementation in Shoreline. For the City to "get ahead" of development to ensure district energy implementation, the following steps should be considered to ensure district energy is ready to meet the energy demands of future development when it comes:

1. **District Energy Feasibility Evaluation (Consultant Cost = $50,000, Staff Cost TBD, Timeframe = 6 months)**

A detailed district energy feasibility evaluation should be conducted to refine the value proposition for district energy in the 185th St. Station Subarea:

- Energy, cost and carbon savings.
- DE system options (including technologies and distribution networks)
- Detailed cost estimate
- Cost of energy service comparison (business as usual vs. DE with various options)
- DE utility development model refinement including roles and responsibilities for public and private partners.
- Identification of key "enabling strategies" to ensure DE system development (i.e., mandatory connection policies).

2. **Preliminary Go/No Go Decision (Consultant Cost = $0, Staff Cost TBD, Timeframe = 2 months)**

Based on the findings of the feasibility evaluation, City Council makes a go/no go decision to engage with a third party district energy provider and makes a potential preliminary commitment of capital for distribution network piping.

3. **Third Party District Energy Provider Selection (Consultant Cost = $0, Staff Cost TBD, Timeframe = 2-3 months)**

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City to develop and issue an RFQ to select a third party DE provider. Based on experience with other cities, this effort will probably take about 2-3 months to develop the RFQ including internal review and approval, issue the RFQ, review responses and make a selection (with or without interviews).

4. **District Energy Evaluation Refinement and Initial Agreements (Consultant Cost = $0, Staff Cost TBD, Timeframe = 6 months)**

Once the DE Provider is selected, an initial MOU will be established between the City and DE Provider to outline requirements for further evaluation including go/no go decision criteria. Refinement efforts will focus on commercial viability (i.e., cost of service acceptable to building owners, investment requirements acceptable to City and DE Provider).

5. **Final Go/No Go Decision (Consultant Cost = $0, Staff Cost TBD, Timeframe = 2 months)**

Based on the go/no go criteria identified in Step 4, City and DE Provider to make go/no go decision.

6. **District Energy Development (Consultant Cost = TBD, Staff Cost TBD, Timeframe = 18 months)**

DE Provider to design, permit and build district energy system.

7. District Energy Operations (Cost = TBD, Time = Ongoing)

DE provider to operate district energy system.

Overall, development of district energy based on the preliminary implementation schedule identified above should take around three (3) years. From a planning perspective, the recommended steps above should begin at least 3-years ahead of major development within the light rail station subareas or Aurora Square. Ideally, timing construction of systems would correlate to other road or utility capital projects.

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Appendix D: Shoreline Climate Action Objectives and Recommendations (Rec.)

Greenhouse Gas Emissions Reduction Goals

- Reduce communitywide greenhouse gas emissions by at least 25% below 2007 levels by 2020, 50% by 2030, and 80% by 2050.
- Achieve zero net greenhouse gas emissions from government operations by 2030.

Energy And Water

OBJECTIVE 1.

Reduce energy consumption

Rec. 1-A: Work with Seattle City Light to continue converting streetlights to LEDs.

Rec. 1-B: Make efficiency upgrades to Shoreline Pool facility to reduce energy use and lower operating costs as funding allows.

Rec. 1-C: Incorporate energy efficiency into upgrades of City facilities to meet ENERGY STAR building performance standards for similar building types. *(Modified from Environmental Sustainability Strategy (ESS) Rec-12)*

Rec. 1-D: Incorporate energy efficiency best practices into new City buildings and consider seeking green building certifications such as LEED or ENERGY STAR for new construction projects. *(Modified from ESS Rec-10)*

Rec. 1-E: Expand the City's Environmentally Preferable Purchasing Guidelines to include additional products that increase energy efficiency. *(Modified from ESS Rec-13)*

Rec. 1-F: Promote the use of Seattle City Light and Puget Sound Energy (PSE) incentives for energy conservation. *(Modified from ESS Rec-17)*

Rec. 1-G: Promote high-performance building and energy efficiency in private construction and remodeling through education and code development. *(Modified from ESS Rec-22)*

OBJECTIVE 2.

Increase renewable energy production and use

Rec. 2-A: Increase City green power purchases through Seattle City Light's Green Up program. *(Modified from ESS Rec-14)*

Rec. 2-B: Streamline permitting for solar photovoltaic (PV) installations.

Rec. 2-C: Through Environmental Services outreach and technical assistance, promote installation of renewable energy systems, and continue to support programs such as the Shoreline Solar Project.

Appendix D: Shoreline Climate Action Objectives and Recommendations (Rec.)

Rec. 2-D: Explore the feasibility of launching a "Solarize Shoreline" bulk-purchasing program of solar PV systems in coordination with NW SEED.

Rec. 2-E: Investigate the feasibility of development of district energy system(s) within the city.

OBJECTIVE 3. **Reduce water consumption**

Rec. 3-A: Assess potential replacement of fixtures and equipment in high-use operations in all City facilities with high-efficiency options. *(Modified from ESS Rec-41)*

Rec. 3-B: Investigate the opportunities for rainwater harvesting and greywater reuse at existing and new City facilities and open spaces. *(Modified from ESS Rec-43)*

Rec. 3-C: Through the new water utility, consider rate structures or incentives for customers to encourage water conservation.

Rec. 3-D: Promote water conservation through outreach and communications to Shoreline residents and businesses.

Materials And Waste

OBJECTIVE 4. **Increase recycling and reuse to reduce solid waste sent to the landfill**

Rec. 4-A: Continue to expand recycling and organics collection services at City facilities and open spaces. *(ESS Rec-37)*

Rec. 4-B: Establish space with large containers to collect and recycle yard debris from Public Works and Parks operations at Hamlin Yard and Brugger's Bog.

Rec. 4-C: Implement construction and demolition (C&D) waste reduction outreach and incentives through the permitting process. *(ESS Rec-40)*

Rec. 4-D: Promote and encourage food scraps and yard debris recycling by residents and businesses through current education programs and the development of a new rate structure in the solid waste contract.

Rec. 4-E: Consider shifting to every-other-week garbage collection and weekly organics collection.

Rec. 4-F: Consider establishing a recycling store that offers reusable items and products made from recycled materials.

Rec. 4-G: Intensify collaboration and outreach with second-hand stores and King County to promote textile collection and recycling.

Appendix D: Shoreline Climate Action Objectives and Recommendations (Rec.)

Rec. 4-H: Support and promote efforts to extend the useful life of products through repair and reuse.

Rec. 4-I: Encourage the use of recyclable products for take-out food containers and utensils in food-service businesses.

OBJECTIVE 5. **Reduce GHG emissions embodied in materials and food consumed**

Rec. 5-A: Increase percentage of recycled content in paper to 100% for color copies when possible.

Rec. 5-B: Select new electronics that meet Electronic Product Environmental Assessment Tool (EPEAT) standards and consider becoming an EPEAT purchasing partner when possible.

Rec. 5-C: Investigate the use of recycled asphalt shingles (RAS) or other recycled products in asphalt used for City paving projects.

Rec. 5-D: Consider seeking grant funds to launch a "Food: Too Good to Waste" campaign (supported by EPA) to encourage food waste reduction by residents.

Rec. 5-E: Promote the use of the City's mini-grant programs to support "collaborative consumption" community projects like tool libraries and repair cafes.

Transportation, Land Use, And Mobility

OBJECTIVE 6. **Reduce fossil fuel consumption by vehicles**

Rec. 6-A: Continue investing in more efficient fleet vehicles.

Rec. 6-B: Support community installation of electric charging stations.

Rec. 6-C: As part of the new water utility, consider installation of "smart" water meters to reduce the vehicle miles required for utility staff to read meters.

Rec. 6-D: Consider participation in the Evergreen Fleets program to reduce the use of petroleum and support clean air.

OBJECTIVE 7. **Reduce use of single occupancy vehicles**

Rec. 7-A: Expand the Commute Trip Reduction program and support services to include medium size employers. *(ESS Rec-35)*

Rec. 7-B: Continue to encourage a decrease in Single Occupancy Vehicle commuting by City employees.

Rec. 7-C: Consider establishing a car sharing program, such as Zipcar, at City Hall for use by City employees and Shoreline residents.

Appendix D: Shoreline Climate Action Objectives and Recommendations (Rec.)

OBJECTIVE 8.

Increase convenience and safety of alternative transportation

Rec. 8-A: Use environmental mini-grants, City communications, and other tools to encourage community efforts to shift to alternative modes of transportation.

OBJECTIVE 9.

Concentrate new growth in proximity of services and transit

Rec. 9-A: Utilize zoning and permitting methods to concentrate new growth in proximity of services and transit. *(ESS Obj-8)*

Urban Trees, Parks, And Open Spaces

OBJECTIVE 10.

Prevent tree canopy loss and improve tree health

Rec. 10-A: Maintain the health of trees planted in public parks, open spaces, and street right-of-ways.

Rec. 10-B: Seek funds to hire an Urban Forester and tree maintenance staff to oversee public forest stewardship and coordinate community volunteers.

Rec. 10-C: Continue collaboration with our community partners to prioritize tree preservation and replacement citywide.

Rec. 10-D: Provide education to residents on importance of tree preservation, planting, and care, and the removal of invasive species.

OBJECTIVE 11.

Maintain and improve parks and open spaces

Rec. 11-A: Identify opportunities for habitat improvements to reduce the urban heat island effect and support carbon sequestration in City open spaces.

Rec. 11-B: Continue to provide environmental mini-grants that support community efforts to establish or enhance natural habitat on private land.