



March 12, 2014
SCA PIC Meeting

Item 6:

Climate Changes Efforts in King County

Discussion Item

SCA Staff Contact

Doreen Booth, Policy Analyst, Doreen@soundcities.org, 206-433-7147.

GMPC Members:

Maple Valley Councilmember Layne Barnes (caucus chair); Shoreline Deputy Mayor Chris Eggen; Sammamish Councilmember Tom Odell; Renton Councilmember Ed Prince; Covington Mayor Pro Tem Jeff Wagner; Issaquah Councilmember Tola Marts; Mercer Island Councilmember Debbie Bertlin; Black Diamond Councilmember Tamie Deady; Pacific Mayor Leanne Guier; Redmond Councilmember John Stilin.

In July 2014, the Growth Management Planning Council (GMPC) is scheduled to make policy decisions setting a greenhouse gas reduction target and supporting measurement framework. The PIC will likely take a position on those potential policies prior to the GMPC meeting. In order to provide the information members will need to take a position, SCA staff is proposing that the Public Issues Committee members begin having a discussion in March and inform SCA staff as to the types of information needed to make an informed decision on the climate change policies. Staff would also welcome direction on what should be included in a proposed policy position.

Background

There are two regional, and related, efforts going on in King County regarding climate change.

One of those efforts, the development of a countywide greenhouse gas reduction target, is underway at the Growth Management Planning Council (GMPC). In its 2012 Update of the Countywide Planning Policies (CPP), the GMPC recommended development of a countywide target that meets or exceeds the state target, along with a supporting measurement framework. The King County Countywide Planning Policies can be found at <http://www.kingcounty.gov/property/permits/codes/growth/GMPC/CPPs.aspx> (pages 14-15).

The GMPC will introduce and consider a proposal for a greenhouse gas reduction target at their May 21 meeting with a decision anticipated in July. Staff members working on the proposal for the GMPC members in May are many of the same staff members working on the King County-Cities Climate Collaborative.

The second ongoing effort is the King County-Cities Climate Collaborative, K4C. Nine cities (Issaquah, Kirkland, Mercer Island, Redmond, Renton, Seattle, Shoreline, Snoqualmie, and Tukwila) are currently members of the Collaborative and have pledged to increase the

effectiveness of local sustainability and climate change solutions by working together. The King County-Cities Climate Collaboration Pledge is attached as [Attachment A](#). For more information about the Collaborative, go to <http://www.kingcounty.gov/environment/climate/other-governments/climate-pledge.aspx>.

On February 13, 2014, 13 cities (Bellevue, Issaquah, Kenmore, Kirkland, Mercer Island, Redmond, Renton, Seattle, Sammamish, Shoreline, Snoqualmie, Tukwila and Woodinville) participated in a King County-Cities Climate Collaboration Elected Officials Working Summit hosted by Executive Dow Constantine and Mercer Island Mayor Bruce Bassett. In a follow up to King County Elected Officials on February 28, Executive Constantine proposed to work on five steps, including setting shared goals through the GMPC's development of a countywide greenhouse gas reduction target and mapping out shared actions. The mapping out of shared actions would inform the target-setting work underway at the GMPC. Other steps noted were pooling resources to support climate action and telling the story of local governments' roles and actions and the challenges ahead. The full text of Executive Constantine's *Follow up from K4C Elected Official Working Summit* dated February 28, 2014 is attached as [Attachment B](#).

The two regional efforts briefly discussed here are proposed to work together; one effort – the policy work of the GMPC in setting a target or goal will be supported by the second effort – tools and strategies set out by the King County-Cities Climate Collaborative.

For your information [Attachment C](#) is a draft background paper prepared by staff of the King County-Cities Climate Collaborative, *Developing a Regional Greenhouse Gas Emission Reductions Target and Measurement Framework*. Please note this document is draft and is subject to change prior to distribution to the GMPC in May.

At the March 12, 2014 pre-PIC meeting there will be a related presentation, an introduction to Climate Action in King County and Overview of the King County-Cities Climate Collaboration - presented by Matt Kuharic, King County and Nicole Sanders, City of Snoqualmie. A second part of the presentation, *“What Will It Take in King County? Analysis of Regional Energy Use, Greenhouse Gas Emissions, and Example Reduction Strategies”* is included as [Attachment D](#) and will be presented by Elizabeth Willmott, Climate Solutions' New Energy Cities Program. Members are strongly encouraged to attend this pre-PIC meeting as background for discussion at the PIC meeting. Staff are also welcome to attend.

Attachments

- A. [King County-Cities Climate Collaboration Pledge](#)
- B. [Executive Constantine's Follow up from K4C Elected Official Working Summit, 2/28/14](#)
- C. [Developing a Regional Greenhouse Gas Emission Reductions Target and Measurement Framework](#)
- D. [What Will It Take in King County? Analysis of Regional Energy Use, Greenhouse Gas Emissions, and Example Reduction Strategies](#)



Whereas, we, King County and the undersigned cities of King County, wish to work together to directly respond to climate change and reduce global and local sources of climate pollution;

Whereas, we believe that by working together we can increase our efficiency and effectiveness in making progress towards this goal;

Whereas, we are interested in achieving this goal in a way that builds a cleaner, stronger and more resilient regional economy;

Whereas, we are interested in focusing on local solutions to leverage and partner with related collaborative efforts;

Whereas, partnering on sustainable solutions will advance progress towards Cities' environmental, climate change, and energy goals such as those adopted by the nearly half of King County Cities that have signed on to the U.S. Conference of Mayors Climate Protection Agreement;

Now, therefore, we agree to participate in this effort and collaborate regionally with our County and City partners to develop and coordinate the following:

- Outreach: Develop, refine, and utilize messaging and tools for climate change outreach to engage decision makers, other cities, and the general public.
- Coordination: Collaborate on adopting consistent standards, benchmarks, strategies, and overall goals related to responding to climate change.
- Solutions: Share local success stories, challenges, data and products that support and enhance climate mitigation efforts by all partners.
- Funding and resources: Collaborate to secure grant funding and other shared resource opportunities to support climate related projects and programs.

Upon signature of an Interlocal Agreement between my city, other participating King County Cities, and King County, my city will participate and contribute to the King County-Cities Climate Collaboration by dedicating staff and a financial contribution.



***Background document from the Summer 2012.
All King County cities are welcome to join at any time.***

Pledge and Collaboration Objectives

The Pledge is a partnership between the Cities of King County and King County itself to increase the effectiveness of local sustainability and climate change solutions by working together. The Collaboration aims to:

- Help develop regional emissions targets and track progress towards these goals
- Share local success stories and challenges
- Pursue and share grants, resources and group funding sources
- Provide coordinated outreach and messaging on climate change solutions
- Raise the profile of climate efforts of King County Cities and the County itself
- Coordinate City and County sustainability efforts through workshops, presentations and other efforts

How is this Different from Existing Efforts?

The King County-Cities Climate Collaboration is the only collaborative climate effort focused solely on local King County-based efforts. Existing networks, such as ICLEI and the Mayor's Climate Protection Initiative, provide resources, camaraderie and political legitimacy, but their scope is on a much larger scale. The Collaboration is focused on the needs of local King County governments.

Collaboration can be an effective motivator for change: it can increase commitment; catalyze action; promote mutual learning through social networks; and strengthen local governments' ability to attract sustainable development investments from both the private sector and grantor agencies. Within the Collaboration, King County municipalities can work together on tangible projects and programs, standardize goals and measures for assessing progress, and share best practices and lessons learned. Collaboration through this effort is also a great way to achieve results with limited resources.

Why is this Important?

To address climate change, action needs to be taken at all levels of government. Climate policy, projects and programs can be fragmented and inconsistent, and many of the tools needed to develop cohesive responses are lacking. Localities must overcome financial, technical, informational, capacity-related and institutional obstacles. Currently, local climate change action has achieved more success than national efforts, but there is a great need to further address sources of climate pollution. For significant emission reductions to occur, city and county governments need to work together.



What will this Pledge funding do?

In support of this effort, King County has already pledged funding to expand the Sustainable Cities Roundtable to a monthly event, with every-other month focused on local and regional climate issues and initiatives. These roundtables are opportunities for sharing best practices, discussion, hearing from experts, workshops and brainstorming on specific projects.

When pledged city funding levels are sufficient, the Collaboration will hire full/partial staff support for Pledge priorities. In future years, the Collaboration may also host an annual symposium, or annual symposium session track addressing local climate solutions.

Cities that sign the pledge will also sign a Technical Service Agreement that includes a detailed Scope of Work for this effort. The Collaboration's Scope of Work will be voted on annually by participating Cities and King County and requires a majority vote by three quarters of participants. Contact either of the below representatives for more details.

Show me the Money (Funding the Pledge)

It's a familiar story: the "green" program sounds nice but how will we pay for it? The King County-Cities Climate Collaboration Pledge includes annual fiscal commitments of its signatories, sometimes helping fund staff support that we perhaps can't afford in our own cities. While the pledge amount is relatively small, what if you already feel like you are scraping the bottom of the barrel for funds?

A recent ICLEI Fact Sheet¹ on sustainability program funding sources provides some ideas:

- Consider the General Fund. As this work assists the efforts of multiple departments, the Collaboration could be considered a general City benefit.
- Leftover federal Energy Efficiency and Conservation Block Grant (EECBG) or other stimulus-related funding. If grant expenditures weren't as high as predicted, they could be directed towards membership.
- Utilities budgets may sometimes provide membership funding. Greenhouse gases come from multiple sources such as landfills, streets and sewers. These departments may be good matches because of the strong nexus between climate pollution creation and mitigation.
 - For future years consider incorporating membership costs in solid waste or other utility fees.
- Some Cities institute cost-saving programs through energy efficiency retrofits and operational changes. If your city has or is considering such a program, consider

¹ For the full factsheet, see www.icleiusa.org/library/documents/ICLEI_Sustainability_Funding_Fact_Sheet.pdf.



dedicating your savings towards a membership aimed at capitalizing on similar programs.

- Environmental Education and Outreach budgets of various departments may also be a natural fit for budgeting the Climate Collaboration.

Pledge Funding: Population Tiers

The Pledge tiers for Collaboration members are based on signatory cities' population sizes. The original tiers were derived by a sample budget to operate the Collaboration including staff needs, events funding, and expanding the Sustainable Cities Roundtable. Three variations of Pledge Tier levels were developed to meet the projected budget. The variations were evaluated by a steering committee based on their fairness to each city, what budgets could realistically incorporate, and what would be sustainable for annual pledging over time. The tiers selected actually were those least expensive for larger cities, and were agreed upon by a wide range of city types, including rural cities, cities of different sizes and different locations across King County.

For more information about this effort, contact:

Matt Kuharic, Senior Climate Change Specialist
 King County Dept of Natural Resources and Parks Director's Office
 (206) 477-4554 (office)
matt.kuharic@kingcounty.gov
 Web: <http://www.kingcounty.gov/climate>

Nicole Sanders, Associate Planner
 City of Snoqualmie Planning Department
 (425) 888-5337 x.1143
NSanders@ci.snoqualmie.wa.us

Exhibit A:

Financial Contribution Matrix

<u>Population Categories</u>	<u>Jurisdiction</u>	<u>Population</u>
Under 5,000	\$500	Level 1
	Skykomish	198
	Beaux Arts Village	299
	Hunts Point	394
	Milton	831
	Yarrow Point	1001
	Carnation	1,786
	Medina	2,969
	Clyde Hill	2,984
	Algona	3,014
	Black Diamond	4,151
5,000 - 19,999	\$700	Level 2
	North Bend	5,731
	Normandy Park	6,335
	Pacific	6,514
	Duvall	6,695
	Newcastle	10,380
	Enumclaw	10,669
	Snoqualmie	10,670
	Woodinville	10,938
	Lake Forest Park	12,598
	Bothell	17,090
	Covington	17,575
	Tukwila	19,107

<u>Population Categories</u>	<u>Jurisdiction</u>	<u>Population</u>
20-39,999	\$1,200	Level 3
	Kenmore	20,460
	Maple Valley	22,684
	Mercer Island	22,699
	SeaTac	26,909
	Des Moines	29,673
	Issaquah	30,434
	Burien	33,313
40- 65,000	\$2,000	Level 4
	Sammamish	45,780
	Kirkland	48,787
	Shoreline	53,007
	Redmond	54,144
	Auburn	62,761
Over 65,000	\$2,500	Level 5
	Federal Way	89,306
	Renton	90,927
	Kent	92,411
	Bellevue	122,363
Over 250,000	\$5,000	Level 6
	Seattle	608,660
King County	\$10,000	Level 7

Note: Population data from the Puget

Sound Regional Council's download of 2010 census data

From: [Kuharic, Matt](#)
To: [Kuharic, Matt](#)
Subject: FW: Follow up from K4C Elected Official Working Summit
Date: Saturday, March 01, 2014 12:10:43 PM
Attachments: [image002.png](#)

City staff and past/present/future partners,

Thank you for your support of the King County-Cities Climate Collaboration and the Elected Official Working Summit that was held two weeks ago. Below is an email that King County Executive Dow Constantine sent to Mayors of all King County Cities on Friday. Please let me know if you have any questions.

Sincerely,
Matt

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Matt Kuharic
Senior Climate Change Specialist
King County's Department of Natural Resources and Parks Director's Office
<http://www.kingcounty.gov/climate>
(206) 477-4554 (office)

From: kcexec@kingcounty.gov
Sent: Friday, February 28, 2014 4:24 PM
Subject: Follow up from K4C Elected Official Working Summit



February 28, 2014

Dear Elected Officials and City Representatives:

Many of you joined me and Mercer Island Mayor Bruce Bassett for the *King County-Cities Climate Collaboration (K4C) Elected Official Working Summit* on February 13th. Thirteen cities representing roughly three-quarters of King County's population participated, and I hope that additional cities will join us as we take next steps.

John Cleveland, President of the Innovation Network for Communities and Executive Director of the Boston Green Ribbon Commission, shared how other local governments around the country are taking action to reduce greenhouse gas emissions 80 percent by 2050. He highlighted the value – and the opportunity – for local governments in King County to be a national model for harmonizing climate actions at a regional scale. We have a solid foundation for this collaborative work with the King County-Cities Climate Collaboration (K4C), which currently includes nine cities and the County.

With help from Climate Solutions' New Energy Cities Program, we saw how far federal and state laws such as federal vehicle efficiency standards and Washington State's Energy Code and Renewable Portfolio Standard will take us. We then walked through potential pathways that in combination can put us on track to close the remaining gap in making deep reductions in climate pollution.

I came away with a sense of optimism that with coordinated efforts by the County and cities, reducing emissions 80 percent below 2007 levels by 2050 is ambitious but achievable. The presentations also underscored the value of setting nearer-term, stair-stepped goals to help us get our arms around the challenge and map out necessary action. Presentations and a detailed overview of the event are available through www.kingcounty.gov/climate/pledge.

I appreciated you sharing your reactions and insights during the summit. Here's what I heard:

- We're in this together; no single local government can tackle the climate change challenge.
- We'll accomplish more through shared goals, coordinated actions, and pooled resources than we will by acting independently.
- We need to draw the connection between transportation and land use decisions and our climate and environment.
- We seek to better understand how the puzzle pieces of climate action work together at many levels and across public and private sectors.
- We need to better understand and share what the County and each of our cities are already doing to address climate change, and hope that other cities will join us in this work.
- We can do a better job telling the story of climate impacts and local solutions in a way that will support further action by local governments, including upcoming work to update Comprehensive Plans.
- We have asked our staff to work together to flesh out a package of collective actions we can take to make progress.

I propose the following as next steps:

1. Setting Shared Goals

In its recent work to update the Countywide Planning Policies, the Growth Management Planning Council (GMPC) recommended development of a countywide climate target that meets or exceeds the state target, along with a supporting measurement framework. The GMPC will introduce and consider a proposal at their May 21 meeting on a timeline to make decisions about related policies in July. The tools and strategies we develop together over the coming months through the work I propose below will inform and support the GMPC process.

If you have questions related to this effort, have your staff contact Karen Wolf, the lead for the GMPC's staff team, at Karen.Wolf@kingcounty.gov.

2. Mapping Out Shared Actions

The presentations we heard at the Summit showed us that getting to 80 percent reduction below 2007 by 2050 is possible. There is a menu of strategies – from building standards, to transit oriented development, to clean fuels – that we can package and carry out in phases to

get us on track. We also heard that strategies need to be tailored to the King County context.

We asked staff to develop a statement of principles and joint county-city commitments for our consideration.

To inform the target-setting process underway through the GMPC, I propose that we focus this work over the next three months so we can consider a recommended package of shared actions in May. If you do not already have city staff involved in the K4C but want to participate in drafting principles and potential commitments, please have your staff follow up with Matt Kuharic, King County Climate Change Program Coordinator at Matt.Kuharic@kingcounty.gov.

3. Pooling Resources

We have an existing framework for pooling resources to support climate action through the *King County-Cities Climate Collaboration (K4C)*, a partnership between the County and the cities of Shoreline, Snoqualmie, Tukwila, Redmond, Renton, Mercer Island, Seattle, Kirkland, and Issaquah. The K4C is partnering on climate change-related outreach, coordination, solutions, and resources. Focus areas include green building, renewable energy, climate messaging, and sustainable transportation.

I encourage all King County cities to join K4C. The required financial commitment is as little as \$500 annually for small cities, plus staff time. As we learned at the workshop, this collaboration of local governments to align climate actions at a regional scale represents groundbreaking leadership. As a next step, we will seek foundation funding to support and expand this work. If you are interested in joining the collaboration, please visit www.kingcounty.gov/climate/pledge

4. Telling Our Story

As discussed at the summit, King County will commit resources to produce a series of short videos to highlight climate impacts in King County, local governments' roles and action, and the challenge ahead. The videos will be broadcast on KCTV and will be available for broadcast by city cable stations and on the internet.

Growing transit service is a key regional climate strategy, and improving mobility is essential to the regional economy. Several Mayors pointed out that we could do more to highlight these connections. I will direct Metro Transit to develop outreach and messaging that better identifies public transit as a critical climate strategy, and I will ask for your support as we share these messages.

Several Mayors called for more information sharing and collaboration to highlight early successes in addressing climate change. We have several upcoming opportunities:

- *5th Anniversary of the Sustainable Cities Roundtables*: I invite you and your city to participate in the 5th anniversary of the Sustainable Cities Roundtables with a two-part morning event highlighting its accomplishments, and looking to its future. I will be participating and will be joined by an all-star lineup including local elected officials, *Time Magazine's* 'Hero of the Planet' Denis Hayes, and Island Press author, Tim Beatley. The event is March 13 from 8 a.m. to Noon at the Bullitt Center in Seattle. [Visit the event webpage](#) to learn more.

- *2014 GoGreen Conference:* King County is the title sponsor of the [2014 GoGreen Conference](#) on April 30 at the Washington State Convention Center in Seattle. GoGreen is *The Sustainability Conference for Business and Government*. We will offer complimentary tickets for all King County Mayors and up to two staff members per city. I strongly encourage you to attend. For King County cities interested in showcasing their cities' climate efforts and resources, we can host a limited number in the networking and display area at the event. To RSVP to attend or host a table, please have your staff contact Glynnis Vaughan at Glynnis.Vaughan@kingcounty.gov by March 14.
- *Infographic:* Another outreach resource is the King County's [Confronting Climate Change](#) infographic prepared by County staff to support my February 10 State of the County speech. It has been well received as an informational tool for graphically illustrating climate change impacts and strategies.
- *Sharing at Our Next Meeting:* As part of the proposed May reconvening (see below), I hope cities will join me in hosting tables with materials and optional posters to informally discuss their cities' work on climate with their elected colleagues before the meeting start and during the break.

5. Reconvening in May

I propose we reconvene in May (*date and location TBD*) for a second Working Summit. The focus of the meeting will be to review and discuss the in-progress work to map out a package of principles and joint county-city commitments that would help achieve local and state GHG emissions reduction targets. I hope that we can work towards a formal decision about these commitments soon after this second summit, and potentially announce a shared vision in June.

I look forward to continuing our work to develop and implement a shared vision responding to the climate change challenge.

If you have any general questions about this effort, please have your staff follow up with Megan Smith, my Environmental Policy Advisor, at Megan.Smith@kingcounty.gov.

Sincerely,

Dow Constantine
King County Executive

Background - Developing a Regional Greenhouse Gas Emissions Reduction Target & Measurement Framework

By

Staff of the King County-Cities Climate Collaboration (K4C)

Collaboration Members: Redmond, Renton, Kirkland, Snoqualmie, Shoreline, Tukwila, Mercer Island, Issaquah, Seattle and King County

Special thanks to Bellevue staff for their informal contributions

Draft of June 2013

Edited - February 5, 2014

DISCLAIMERS:

This document was prepared during early summer 2013. Since then, additional climate policies have been adopted as climate related efforts across the region and country ramp up.

This document was prepared by K4C staff. It does not represent formal positions of participating cities, King County or of the Growth Management Planning Council's (GMPC) Interjurisdictional Staff Team (IJT).

The GMPC's IJT has indicated that it plans to bring GHG target and measurement related policy recommendations to the GMPC in May 2014, for consideration and potential action later during the summer of 2014.

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Developing a Regional Greenhouse Gas Emissions Reduction Target & Measurement Framework

Introduction

The King County-Cities Climate Collaboration presents this paper to support the Growth Management Planning Council (GMPC) and the GMPC Interjurisdictional staff team's work related to Countywide Planning Policies EN-17 and EN-18 – which direct the GMPC to develop a regional greenhouse gas (GHG) emissions reduction target and supporting measurement framework.

1. **Background Materials**
 - A. Existing Countywide Planning Policies
 - B. Existing state, county and city greenhouse gas reduction goals, targets and requirements
 - C. Scientific background and the rationale for a target of 80% emissions reduction below the 2007 level by 2050
 - D. GHG measurement framework details
2. **Solutions Menu** – While providing recommended actions is not the focus of this memo, example projects, programs, decisions, and policies to illustrate how cities might achieve climate targets are provided

Background Materials

Countywide Planning Policies

Two policies within the Environment section of the Countywide Planning Policies direct the GMPC to establish a regional GHG emissions reduction target and measurement framework:

EN-17: Establish a countywide greenhouse gas reduction target that meets or exceeds the statewide reduction requirement that is stated as the 2050 goal of a 50 % reduction below 1990 levels.

EN-18: Establish a greenhouse gas emissions inventory and measurement framework for use by all King County jurisdictions to efficiently and effectively measure progress toward countywide targets established pursuant to policy EN-17.

Existing Greenhouse Gas Emissions Reduction Goals, Targets and Requirements

WASHINGTON STATE LEGISLATIVE AUTHORITY

Executive Order 07-02¹ and E2SHB 2815² established the Washington State GHG reduction requirements (RCW 70.235.020³) as follows:

- Limit emissions to 1990 levels by 2020
- Limit emissions to 25% below 1990 levels by 2035
- Limit emissions to 50% below 1990 levels by 2050

WASHINGTON STATE GHG EMISSIONS STATUS

In 2008, total Washington State GHG emissions were 101.5 MMTCO₂e, down 2.4% from 104.0 MMTCO₂e in 2007, but up approximately 8.8% between 1990 and 2008.⁴

KING COUNTY AUTHORITY

King County's community level target is to reduce countywide GHG emissions by at least 80 % below 2007 levels by 2050. This policy is one of two overarching GHG emissions reduction targets established in King County's 2012 Strategic Climate Action Plan⁵ (SCAP). The 2012 King County Comprehensive Plan⁶ reflects Countywide Planning Policies, the commitment to at minimum achieve the statewide requirement, but to also work towards establishing more ambitious targets consistent with the County's own 80% below 2007 reduction target.

2012 King County Strategic Climate Action Plan

Communitywide target: King County shall partner with its residents, businesses, local governments and other partners to reduce countywide greenhouse-gas emissions by at least 80 percent below 2007 levels by 2050.

2012 King County Comprehensive Plan

Policy E-210: King County shall collaborate with its cities, and other partners, to meet or exceed the statewide greenhouse gas emissions reduction requirement of 50 percent below 1990 levels by 2050.

Policy E-211: King County shall collaborate with its cities and other partners to develop near term targets to achieve greenhouse gas emission reductions throughout the region to 80 percent below 2007 levels by 2050.

KING COUNTY GHG EMISSIONS STATUS⁷

The *2010 Update of Core Greenhouse Gas Emissions in King County*⁸ (published August 2012) as well as the most recent comprehensive assessment of community level emissions – *Greenhouse Gas Emission in King County*⁹ (published February 2012) – both document that total GHG emissions in King County continue to rise. The geographic based inventory details a total rise in community level GHG emissions of 5% between 2003 and 2008 (from 22.4 million metric tons of carbon dioxide equivalent (MMTCO₂e) in 2003 to 23.4 MMTCO₂e in 2008), while core

emissions (related to on road transportation, residential and commercial buildings, and waste) rose approximately 3% over that time period. Between 2008 and 2010 core emissions increased an additional 1.3%.

However, data from these assessments also indicate that GHG emissions per person are on the decline; core emissions have decreased about 5% per person between 2003 and 2010 with the decrease accelerating slightly between 2008 and 2010 approaching an about 1% decrease per person per year. Significant declines in per-person vehicle travel and slight declines in building energy use mostly explain these decreases.

The *GHG Emissions in King County* inventory also went beyond King County's borders and tallied the emissions caused by goods and services that were produced somewhere else – somewhere outside King County – and consumed within King County. This study documents that the emissions produced by goods and services manufactured around the globe and consumed locally more than double King County's emissions footprint.

COMPARISON OF WASHINGTON STATE AND KING COUNTY TARGETS

When comparing Washington State and King County, the King County policy of achieving a reduction of 80% below 2007 levels is significantly more ambitious than Washington State's adopted requirement of achieving a reduction of 50% below 1990 levels. However, it is important to note that Washington State's target is a "requirement" vs. King County's "target."

Washington Target: Washington State's 1990 emissions were 92.90 MMtCO_{2e}, 50% of which would be 46.45 MMtCO_{2e}.

King County Target: Washington State's 2007 emissions were 104 MMtCO_{2e}. Achieving the 80% target would require a reduction to 20.80 MMtCO_{2e}.

Hence, if the King County's target were applied statewide, then statewide emissions would need to be reduced by nearly two times more than what the State's reduction target calls for—by 83.2 MMtCO_{2e}, as opposed to 46.45 MMtCO_{2e}.

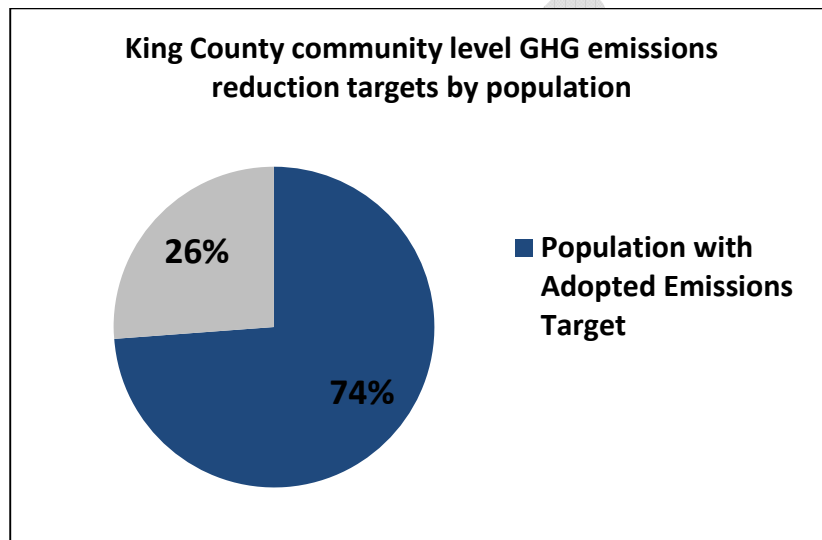
Put another way, King County's reduction of 80% below 2007 levels if applied statewide would require a reduction in statewide emissions to 77.6% below 1990 levels, whereas to match the State's goal of 50% below 1990 levels, King County would only have to set a goal of 55.3% below 2007 levels.

While many efforts are focused on action that helps reduce GHG emissions, neither Washington State nor King County have attributed GHG reduction responsibilities to localities.

Washington State and King County are both measuring progress relevant to these goals through methodologies that are similar but not identical.

KING COUNTY CITIES’ COMMUNITY LEVEL GHG REDUCTION TARGETS

The pie chart graphic below shows that nearly three-quarters of King County’s population lives in jurisdictions where the direct local government has a community level GHG emissions reduction target. For the purposes of this exercise, King County’s countywide targets are only ascribed to unincorporated areas.



- **17 of 39 King County cities** have adopted the U.S. Mayor’s Climate Protection Agreement 2012 GHG emissions targets (which includes a short-term goal of 7% below 1990 levels by 2012). Some city targets diverge from this goal, but all cite this Agreement as influencing their targets.

<ol style="list-style-type: none"> 1. Auburn (partially in King County) 2. Bellevue 3. Burien 4. Carnation 5. Clyde Hill 6. Issaquah 7. Kirkland 8. Lake Forest Park 	<ol style="list-style-type: none"> 9. Pacific (partially in King County) 10. Redmond 11. Renton 12. Sammamish 13. Seattle 14. Shoreline 15. Snoqualmie 16. Tukwila 17. Yarrow Point
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- **Kirkland¹⁰** has targets of 10% below 2005 levels by 2010, 20% below 2005 by 2020, and 80% below 2005 by 2050.
- **Issaquah¹¹** has a target of 80% below 2007 levels by 2050.
- **Mercer Island¹²** has a target of 80% below 2007 levels by 2050.

- **Seattle**¹³ has adopted carbon neutrality as its community level target¹⁴ (2008 baseline¹⁵);
- **Shoreline**¹⁶ has a target to reduce emissions by at least 25% below 2007 levels by 2020, 50% by 2030, and 80% by 2050.
- **Bellevue** passed Resolution 7517 in 2007 which adopted the goal of reducing emissions by 7% below 1990 levels by 2012, or a projected emissions reduction of 629,921 tons.¹⁷
- Some cities in King County have integrated GHG emission reduction policies into their comprehensive plans without specific targets.

OTHER STATE AND CITY GHG REDUCTION TARGETS

Multiple other U.S. states¹⁸ have targets significantly stronger than Washington State’s requirement (and in cases stronger than King County’s target).

- **Oregon:** 75% below 1990 levels by 2050
- **California:** 80% below 1990 levels by 2050
- **CO, NM, MN, MI, FL, NY, CT** all have set stronger goals than Washington

The chart below shows examples of reduction targets in other cities in Washington State. The King County-Cities Climate Collaboration reviewed other county and city targets in addition to these noted in this section, but chose not to include them all. 17 Washington State cities outside of King County have signed the US Mayors Climate Protection Agreement; below are example targets with some associated background.

Additional Examples of Washington State Cities’ Reduction Targets

City	Reduction Target	Justification
Anacortes ¹⁹	Anacortes proposed to reduce emissions by 15% by 2020 for community and government; not adopted	Small Community, based on other local cities committing to 10% to 20% reduction targets
Bellingham ²⁰	<i>Municipal:</i> Reduce emissions by 64% of 2000 levels by 2012 and by 70% by 2020. <i>Community:</i> Reductions of 7% below 2000 levels by 2012 and 28% from 2000 levels by 2020	Environmental Resource Staff based the target upon IPCC data stating that reductions 70-80% below 1990 levels are needed to stabilize climate change
Coupeville ²¹	Reduce emissions by 20% below 2000 levels by 2020	
Edmonds ²²	1990 by 2020; 25% below 1990 by 2035; 50% below 1990 levels by 2050	US Mayors Agreement/Kyoto Protocol
La Conner ²³	A 20% reduction below 2005 levels (5,925 tons of eCO2) by 2020 recommended; not officially adopted.	See GHG inventory.

GOVERNMENT OPERATIONS GOALS, TARGETS, AND REQUIREMENTS

Washington State

Washington State's "State Agency Climate Leadership Act"²⁴ sets goals for state agencies and operations targets that are "consistent with," but different than, statewide requirements:

- 15% below 2005 levels by 2020
- 36% below 2005 by 2035
- 57.5% below 2005 by 2050

These targets applies to 140 state agencies including all administrative, legislative, judicial and elected offices, boards and commissions, community and technical colleges, and universities. All agencies had to report 2005, 2008 and 2009 emissions with no minimum thresholds and no defined protocols, although the Department of Ecology developed a tool to support many agency calculations. Universities used other methods. Total reported State Agency GHG emissions **increased 3.8% from 2005 to 2009.**²⁵

King County

The 2012 King County Comprehensive Plan set a long term 80% below 2007 GHG emissions reduction target for government operations, and also directed the development of near-term targets to help achieve the long term goal. The 2012 King County Strategic Climate Action Plan set these near term targets in a stair stepped approach towards the long term goal:

2012 King County Comprehensive Plan

E-206 King County shall reduce total greenhouse gas emissions from government operations, compared to a 2007 baseline by at least 80% by 2050.

E-207 King County shall develop near-term reduction targets of greenhouse gas emissions emanating from its government operations to help achieve the 2050 goal.

2012 King County Strategic Climate Action Plan

County operations target: King County shall reduce total greenhouse-gas emissions from government operations, compared to a 2007 baseline, by at least 15 percent by 2015, 25 percent by 2020, and 50 percent by 2030.

The scope covers "all emissions" from government operations but is not further defined. Between 2007 and 2011, King County government operations' energy-related GHG emissions from increased by roughly 1%. However, emissions from non-transit sources such as buildings decreased by 4% since 2007.²⁶ King County Metro estimates that there is a net benefit from the transit system as a result of emissions avoided by providing transit service (through transportation mode shift, congestion relief and land use benefits).

City Operational Targets

Seattle: The City of Seattle has set a goal to reduce emissions from operations by 30% below 2008 levels (72,600 MTCO₂e) by 2020²⁷.

Mercer Island: Mercer Island set an interim goal to reduce operational emissions by 5% below 2007 level by 2012²⁸.

Shoreline: Set a target to achieve zero net greenhouse gas emissions from government operations by 2030²⁹.

British Columbia - Provincial Government

Beginning in 2010, the B.C. provincial government and all related public sector organizations (including school districts, post-secondary, health authorities, crown corporations and core B.C. government)³⁰ **were required to and achieved carbon neutrality** per requirements of the Greenhouse Gas Reduction Targets Act³¹ and subsequent Carbon Neutral Government Regulation.³² The scope of emissions covered includes: energy use in buildings, fuel use in fleets (except for public transit), travel-related sources and emissions related to paper use.

The Pacific Carbon Trust³³ is a provincial Crown corporation set up by the British Columbia government to acquire credible **greenhouse gas (GHG) offsets** on its behalf and helped government achieve its target of a carbon-neutral public sector by 2010. Offsets represent emission reductions or removals through projects such as renewable energy generation, energy efficiency initiatives or tree planting (price is \$25 Canadian/metric ton).

British Columbia - Local Governments

*Most B.C. local governments have made the **voluntary but incentivized** commitment to become carbon neutral by 2012; 180 out of 188 municipalities have signed the B.C. Climate Action Charter³⁴ and related commitments. Municipalities that make this commitment have 100% of their carbon taxes refunded in a no-strings-attached grant (see more via in the BC Climate Action Toolkit)³⁵. The scope of the included emissions³⁶ is relatively narrow: key included sources are emissions from energy in buildings and fuel for fleets; excluded sources include courthouses, landfills, staff commuting and travel construction, etc. The general method is to reduce emissions and then offset emissions, using the Pacific Carbon Trust.*

Scientific Background

WHAT IS THE DERIVATION OF THE 2°C/80% EMISSIONS REDUCTION RATIONALE?

The 80% GHG emissions reduction target is based on the consensus developed over the last decade that to avoid the most devastating impacts of climate change, global temperature increases should be limited to no more than ~2°C since the beginning of the 20th century.

The best available science as outlined by the Intergovernmental Panel on Climate Change, and as committed to in the United Nations Copenhagen Accord (2009), as well as by many countries at the Cancun United Nations Framework Convention on Climate Change (2010), indicates that to achieve this goal, concentrations of atmospheric carbon dioxide would need to be stabilized at roughly 450-475 ppm, which would require a global reduction in emissions of roughly 80% by 2050 (different regions have adopted a diversity of targets and baseline years largely consistent with an 80% reduction but that would benefit from consolidation and coordination).

As a part of global GHG emissions, the sources from King County and its cities, local residents, businesses and others are relatively small. However achieving an 80% GHG emissions reduction target would mean that the region would be doing its part and in doing could set an example that might help lead to larger-scale progress.

WHAT ARE THE IMPACTS OF A 2°C WARMING?

Limiting warming to a 2°C global increase will still result in serious impacts as the following examples show:

*Examples of Global Impacts*³⁷

- 400-800% increase in the area burned by wildfire in parts of the western U.S.
- 10-30% reduction in the yields of crops as currently grown
- 10-20% changes in precipitation across many regions
- 6-24% increase in hurricane destructive power
- Rising sea levels and increasingly acidic marine waters

*Examples of Local Impacts*³⁸

- 44% decline in spring snowpack across Washington State
- 14-29% increase in the magnitude (i.e. amount of precipitation) of 24 hour storm events in the Seattle-Tacoma area³⁹
- More extreme river flooding. At a temperature increase of roughly 3°C, the 100-year flood event for the Green River near Auburn could increase in magnitude up to 76% - with a similar range of increased flooding projected for the Snohomish River

HOW MUCH OF WARMING IS “LOCKED IN” FROM RECENT EMISSIONS

The best estimate is that 1,000 gigatonnes (equivalent to 10¹² tonnes or 1,000,000 MMTCO₂e) of human emitted carbon emissions would lead to about a 1.75°C increase in global average temperature.⁴⁰ Cumulative human carbon emissions by 2010 were about 500 gigatonnes. The climate system takes time to come to an energy balance, and it is estimated that equilibrium warming is about twice as large as initial, transient warming. This means that even if atmospheric greenhouse gas concentrations are immediately stabilized, we could expect additional, significant warming as climate system feedbacks occur. For example warming will result in less snow and ice cover, likely leading to additional warming.

Averaged over all land and ocean surfaces, global temperatures have warmed roughly 0.8°C above pre-industrial levels⁴¹ and additional warming of roughly this magnitude would occur even if concentrations were immediately stabilized.

RECENT TRENDS IN GLOBAL GHG EMISSIONS

In May of 2013, CO₂ concentrations as measured at Mauna Loa, Hawaii, reach average daily levels above 400 ppm⁴², a symbolic milestone. This high a concentration has not been measured on Earth in at least three million years. Global carbon-dioxide (CO₂) emissions from

fossil-fuel combustion reached a record annual high of 31.6 gigatonnes (Gt) in 2011, according to preliminary estimates from the International Energy Agency (IEA).⁴³ In 2010, U.S. GHG emissions totaled 6.82 gigatonnes. Over the last few years, U.S. emissions have been about 20% of the global totals. U.S. emissions rose by 3.2% from 2009 to 2010. Since 1990, U.S. GHG have increased by 10.5%⁴⁴.

In King County, GHG emissions from local sources increased 5% between 2003 and 2008 even though per-person emissions decreased slightly during this time – a period of significant economic growth – largely due to reduced driving and an increase in fuel efficiency of vehicles. However, emissions associated with local consumption by residents, governments, and businesses, including from the production of goods, food, and services from outside the County, were more than twice as high as emissions inside the County's borders.

More recently, core emissions in King County (emissions from on road transportation, commercial and residential buildings and waste) have continued to rise slightly, increasing 1.3% from 16.4 MMTCO₂e in 2008 to 16.6 MMTCO₂e in 2010, maintaining approximately the same rate of growth as between 2003 and 2008. However, these gains were less than the rate of population growth (2.9%), meaning that core emissions per person continued to decline. Per-person emissions declined from 9.0 MTCO₂e per resident in 2003 to 8.7 MTCO₂e in 2008 (a 0.6% average decline per year) to 8.6 MTCO₂e in 2010 (a 0.8% average decline per year).

ADDITIONAL CONSIDERATIONS

It is important to note that as global emissions have continued to rise, the 80% reduction target may not be enough to avoid a greater than 2°C warming. Further, many in the climate field argue that industrialized countries and affluent regions should reduce emissions by more than 80% since they are most responsible for GHG emissions in the atmosphere now. No consensus has been achieved as it relates to countries' global reduction responsibilities.

Emissions-reduction goals will continue to evolve based on global GHG emissions trends and as policymakers wrestle with what might be considered an "acceptable level" of climate change impacts to the environment, economy, and human health.

GHG Measurement Framework

At a community level, King County is committed to frequent updates of core emissions as well as more comprehensive periodic GHG emissions inventories. Historically, there have been no widely adopted community level emissions reduction protocols (i.e., standards for how to count GHG emissions and related reduction opportunities).

However, in October 2012 a new ICLEI led community level protocol was published⁴⁵. This protocol is largely consistent with King County's historic inventories and could be a good model for King County and its cities. *The Climate Registry* also has a strong government operations-focused protocol that is becoming widely adopted.⁴⁶

Solutions Menu

City Policies

In August 2012, the King County-Cities Climate Collaboration sent out 32 emails to city staffers in King County, asked respondents to report on Comprehensive Plan policies related to global warming and climate change. Examples of policies highlighted by various cities are provided:

Carnation, LU6.7: Promote land use decisions that will reduce the production of greenhouse gases by reducing vehicular miles traveled, retaining and expanding tree canopy, and reducing energy use.

Federal Way, TP67: Promote the creation and use of a regional transit system that provides a cost effective alternative mode of travel to the single occupant auto, and assists the region in attaining air quality standards...

Issaquah, Objective L-8: The City shall identify and develop targets, strategies, regulations and policies to limit the community's impact upon climate change such as through development and redevelopment requirements, improved efficiency, carbon sequestration and other climate solutions.

Issaquah, L-8.3: Carbon Footprint Development: The City should complete carbon footprint studies for the community and develop and track progress towards emissions reduction targets.

Kirkland, CAP Communication Goal (2): Encourage residents, businesses and institutions to reduce greenhouse gas emissions and provide tools to help them attain reductions in their daily lives.

Redmond, NE-113c: Include analysis of climate change impacts when conducting environmental review under the State Environmental Policy Act (SEPA).

Redmond, NE-113f: Identify and address the impacts of climate change on the City's hydrological systems.

Renton, EN-48: Actively participate in state and regional efforts to control the atmospheric pollutants responsible for global climate change.

Shoreline, NE37. Advocate for expansion of mass transit and encourage car-sharing, cycling, and walking to reduce greenhouse gas emissions, and as an alternative to dependence on automobiles.

Shoreline, NE39. Support and implement the Mayor’s Climate Protection Agreement, climate pledges and commitments undertaken by the City, and other multi-jurisdictional efforts to reduce greenhouse gases, address climate change, sea-level rise, ocean acidification, and other impacts of changing of global conditions.

Shoreline, NE43. Promote community awareness, responsibility, and participation in sustainability efforts through public outreach programs and other opportunities for change. Serve as catalyst and facilitator for partnerships to leverage change in the broader community.

Snoqualmie, 5.G.2.4: Demonstrate applications of energy efficiency and renewable energy use in municipal buildings.

Snoqualmie, 5.G.2.6: Operate and maintain the City’s vehicle fleet to improve fuel efficiency and reduce costs. Consider vehicles that use alternative fuel sources for greater energy efficiency and lower pollution.

Yarrow Point, Greenhouse Gas Emission Reduction Policy: Manage Street Lighting needs by applying lighting standards and using lamps that will assure safe and effective illumination at minim cost and energy use.

Yarrow Point, Greenhouse Gas Emission Reduction Policy: Encourage ride-sharing, vanpooling and the use of flex-time by employees.

An additional resource is the CAPCOA report, *Model Policies for Greenhouse Gases in General Plans*⁴⁷. Although developed for California, many policies are applicable in Washington:

“The report also provides a worksheet for evaluation of policies for local use, including consideration of specific local factors and criteria...(with) links to examples of plans that have incorporated the model policy, or a similar policy, to provide more in-depth understanding of what has been done, under what circumstances, and how.”

CAPCOA Model Policies

The report offers model language in nine major categories:

- GHG reduction planning
- Transportation
- Land use and urban design
- Energy efficiency
- Conservation & open space
- Education
- Waste reduction and diversion
- Municipal Operations
- Alternative energy

Appendix: Example Programs and Projects

Programs and Projects

Common Climate Action Plan Strategies: A selection of strategies commonly found in municipal Climate Action Plans.

Notes: How these strategies worked in other jurisdictions, and the costs or environmental benefits associated with the strategy.

Common Climate Action Plan Actions	Notes
Purchase Green Electricity	Purchasing green power supports the creation of alternative energies, and significantly reduces the carbon footprint of the purchaser. Utility providers like Puget Sound Energy offer a green electricity option through their Green Power Program. It costs an additional \$0.0125 per kWh, or can be purchased in blocks of 160 kWh for \$2. If the City of Redmond were to purchase 100% green energy, this would equate to a 13% increase in the rate it pays for electricity (14million kWh, ~\$175,000). This price can be offset by energy efficiency gains in buildings, street lights, and water delivery. Even purchasing 20% of energy from green power sources would have a significant impact on GHG reductions.
Set aggressive community wide recycling and composting goals	Every 1 ton of waste that is sent to the landfill translates to roughly 2.97 metric tons of CO2 produced. By setting aggressive recycling goals for the city, significant carbon savings can be achieved. If a city with 50,000 residents increased their recycling rate by 1%, it would save 813 tons of CO2 every year, or the equivalent of powering 92 homes for a year. (Using average waste of 3 pounds/person/day)
Encourage and incentivize green building development	The local government can play a role in educating and encouraging developers to build green buildings. Incentives for green buildings can be monetary, like feebates, tax incentives, grants and fee waivers or reductions. A city could encourage green development with non-monetary incentives abbreviated permitting timelines, development bonuses such as increased density or reduced parking, publicity and awards or free technical assistance. These incentives programs can be successfully implemented, even if funding is minimal. Seattle currently has 33 million square feet of LEED certified green buildings, which saves on average 24% energy over the energy code.

<p>Participate in Bike to Work Month</p>	<p>The Puget Sound Bike to Work event started in 1973, with Cascade Bicycle Club taking over and promoting, instead, Bike to Work Day as a commute challenge event. In 2009, 15 City employees from the City of Kirkland participated in the Bike to Work Month Commute Challenge in May, reducing over 1,500 miles of driving. About 1 lb of CO₂e is eliminated for every mile biked according to the Cascade Bicycle Club. Cities can promote the event among municipal employees, among their business community, or in neighborhood and urban centers.</p>
<p>Implement a "Safe Routes" Project that encourages walking and biking around schools.</p>	<p>In 1968, 48% of children between 5 and 14 years old walked or biked to school. Today, that number has dropped to 13%. Preliminary results from Washington SRTS projects show an almost 40 % increase in the number of children walking and bicycling to school. At a school with 100 students, if 18% of the student body walked or biked to school (assuming they live 1 mile from school, 18% is 40% increase over national average), it would save 6,052 pounds of CO₂ a year. Significant reduction in local air pollution, traffic congestion, and GHG emissions would also be achieved.</p>
<p>Purchase fuel efficient, alternative fuel and/or smaller fleet vehicles</p>	<p>If a government agency were to replace the traditional fleet vehicles with a hybrid or electric car, they could achieve economic savings and reduce GHG emissions. Replacing 3 traditional fleet vehicles with 3 hybrid cars would save a government agency \$37,500 over the life of the vehicle, and reduce CO₂ emissions by 102 metric tons (assume 10 years). A hybrid car purchased today would save \$6,250 in fuel costs over a traditional vehicle in 5 years. An electric car, \$8,500. Annual fuel costs would be \$1,050 and \$600 respectively.</p>
<p>Install and encourage the use of green and reflective roofs in development projects.</p>	<p>Green roofs can reduce the heating and cooling cost of a building, reduce the urban heat island effect, and provide carbon sequestration and stormwater treatment. According to EPA, about \$40 billion is spent annually in the US to air condition buildings — one-sixth of all electricity generated in a year. Reflective roof products reduce the annual energy consumption by up to 65%. Green roofs can save between 15 and 45% in annual energy costs. Researchers estimate that a 1,000-square foot green roof is roughly equivalent to the annual emissions of 15 passenger cars.</p>
<p>Pass a Energy Star equipment replacement policy for internal operations</p>	<p>Since 2006 & 2008 the City of Kirkland has replaced its Desktop Personal Computers and CRT (Cathode-Ray Tube) monitors, with ENERGY STAR and LCD monitors respectively. ENERGY STAR PCs use about 15% of the energy of their counterparts, while LCDs use 30% less power than CRTs. The replacement of 453 Personal Computers has net an annual reduction of 22,876 kWh annually, the equivalent of 110 tons of CO₂e.</p>
<p>Maintain healthy urban forests and street trees</p>	<p>1 street tree can reduce up to 48 pounds of CO₂ every year. Urban forest carbon sequestration is only a fraction (4.4 %) of the amount of carbon stored in rural forests. Although this number may seem low, urban trees have a greater per-tree effect on reducing greenhouse gas concentrations than trees in rural forests. This is due to the secondary effects that urban trees have on reducing energy use, by helping reduce the impact of urban heat island. The shade from a single well-placed mature tree reduces annual air conditioning use two to eight % (often in the range of 40-300 kWh)</p>

<p>Encourage or Require large commercial property owners to report on energy consumption</p>	<p>The Energy Benchmarking and Reporting Program in Seattle (Ordinance 123226 and 123993) requires non-residential and multifamily building owners in Seattle to conduct annual energy performance tracking through the U.S. EPA's Portfolio Manager, a free and secure online tool. The program assists implement Washington State Law (RCW 19.27A.170), wherein building owners and operators must disclose benchmarking data and ratings to potential buyers, renters or lenders for buildings greater than ten thousand sq ft. The state law only applies to state and nonresidential buildings. Portland Mayor Sam Adams recently challenged commercial property owners to join in the The Kilowatt Crackdown, a friendly competition to cut energy use, using cost savings and public praise as incentives. The program helps participants benchmark energy use, and learn how to trim energy use while cutting costs.</p>
<p>Construction and demolition recycling program</p>	<p>8,000 pounds of waste are typically thrown into the landfill during the construction of a 2,000 square foot home. In Seattle and King County, construction and demolition debris make up about 30 % of the yearly waste stream at 400,000 tons. King County assumes that a commercial development project with 600 tons of waste could save over \$40,000 by recycling materials instead of paying for their disposal at landfills.</p>
<p>Develop bicycle infrastructure such as cycle tracks, dedicated bicycle lanes, greenways</p>	<p>A short, four-mile round trip by bicycle keeps about 15 pounds of pollutants out of the air we breathe. Higher levels of bicycle infrastructure are positively and significantly correlated with higher rates of bicycle commuting. Portland, Oregon expanded their bicycle network by 166 miles over 15 years, which correlates with a 5-fold increase in the number of bicyclists. These mode shifts have contributed to a 12.5% reduction in per capita carbon emissions and is estimated to yield carbon savings worth between \$28 and \$70 million annually.</p>
<p>Installation of Energy Efficient Street Lights</p>	<p>Street lighting is often one of the largest items of a local government energy budget. If a city were to replace 100 traditional street lights with 100 LED lights, they would save more than 50% on their energy bill, saving approximately \$6,300 annually in energy costs alone. There are additional savings with reduced maintenance and replacement of LED street lights as they last 5 times as long as the traditional bulb. These bulbs will also reduce carbon emissions associated with lighting by 80%.</p>
<p>District Energy or Combined Heat & Power Developments</p>	<p>District Energy systems provide heating and cooling to a large number of buildings in the "district". This method has a relatively small environmental footprint compared to traditional heating and cooling methods. Municipal governments can support infrastructure development for these systems. Seattle Steam's District Energy system has the capacity to cut their carbon footprint in half (and that of its customers) by reducing CO₂e emissions by about 45,000 tons annually. This is the same as eliminating the CO₂e emissions from the annual energy use of over 3,700 homes.</p>

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- ⁴⁷ <http://www.ca-ilg.org/document/capcoa-model-policies-greenhouse-gases-general-plans>



What Will It Take? King County Energy Map and Carbon Wedge Analysis February 13, 2014



King County's Community Level Greenhouse Gas (GHG) Reduction Goal: *80 percent below 2007 levels by 2050*



- Avoid most devastating impacts of climate change (2°C limit)
- Five cities have adopted goals of 80x2050 or carbon neutrality
- 19 of 39 King County cities adopted U.S. Mayors' GHG red. targets
- King County's Growth Management Planning Council process will develop shared regional and near-term targets

40% reduction by 2030 can be used as a "stair step" approach toward the 2050 goal

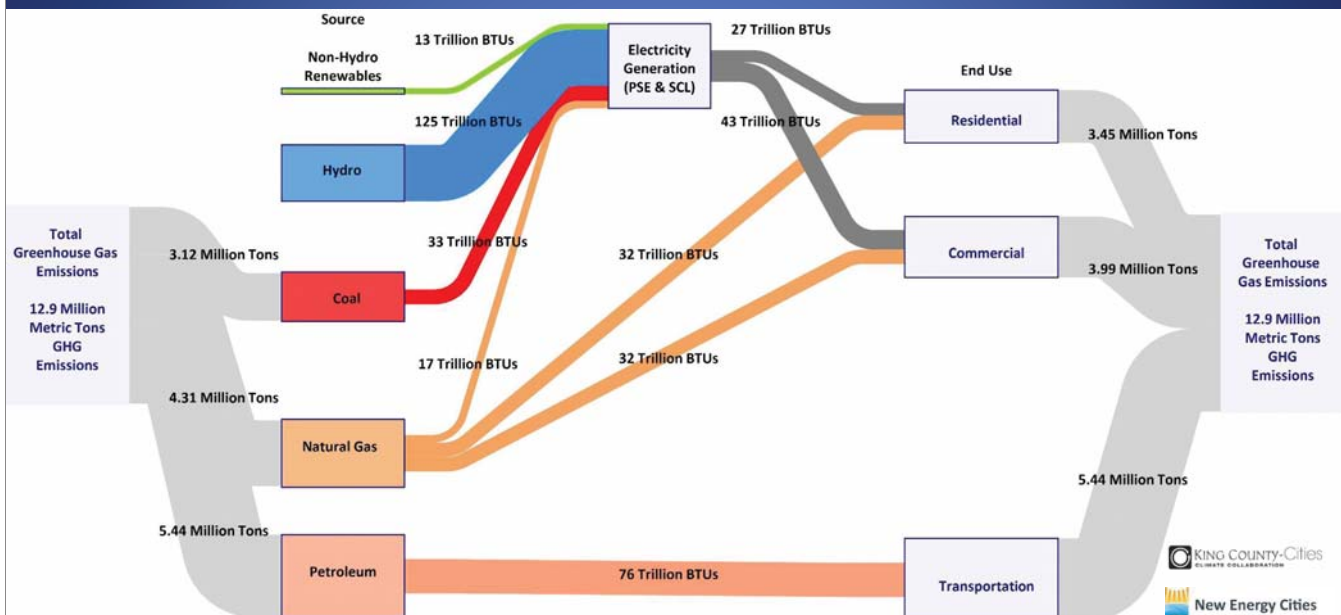
Key Data Sources for Energy Map & Carbon Wedge Analysis

Category	Measure/Assumption	Sources
Transportation	Vehicle miles traveled	Puget Sound Regional Council, King County
Commercial*	Electricity and natural gas consumption	Seattle City Light, Puget Sound Energy
Residential	Electricity and natural gas consumption	Seattle City Light, Puget Sound Energy
Population growth	Projected population growth	State Office of Financial Management, King County

*Including industrial energy consumption



2012 King County Energy & Carbon Map



Cities account for ~90% of King County's total electricity & natural gas use

Utility Fuel Mix (2012)

Seattle City Light

Source	Percentage
Hydropower	90%
Nuclear	4.4%
Wind	3.9%
Coal	0.76%
Landfill	0.50%
Biomass	0.32%
Natural Gas	0.30%

Cogeneration and solar were each less than 0.1% of City Light's fuel mix in 2012.

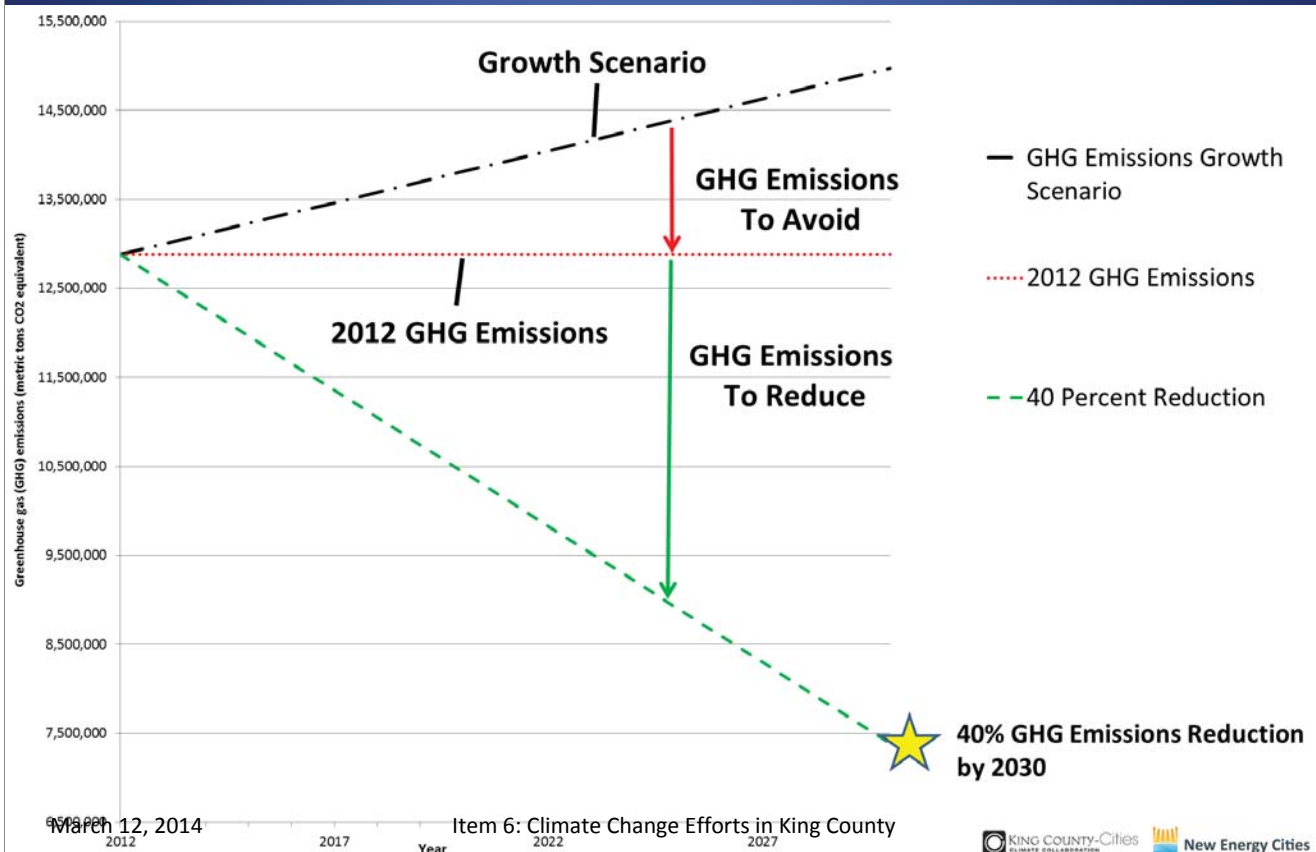
Puget Sound Energy

Source	Percentage
Hydropower	42%
Coal	30%
Natural Gas	16%
Wind	8.4%
Cogeneration	2.1%
Nuclear	1.3%
Waste	0.24%
Biomass	0.23%
Petroleum	0.18%

Solar was less than 0.1% of Puget Sound Energy's fuel mix in 2012.



Potential GHG Growth v. 40x2030 Reduction



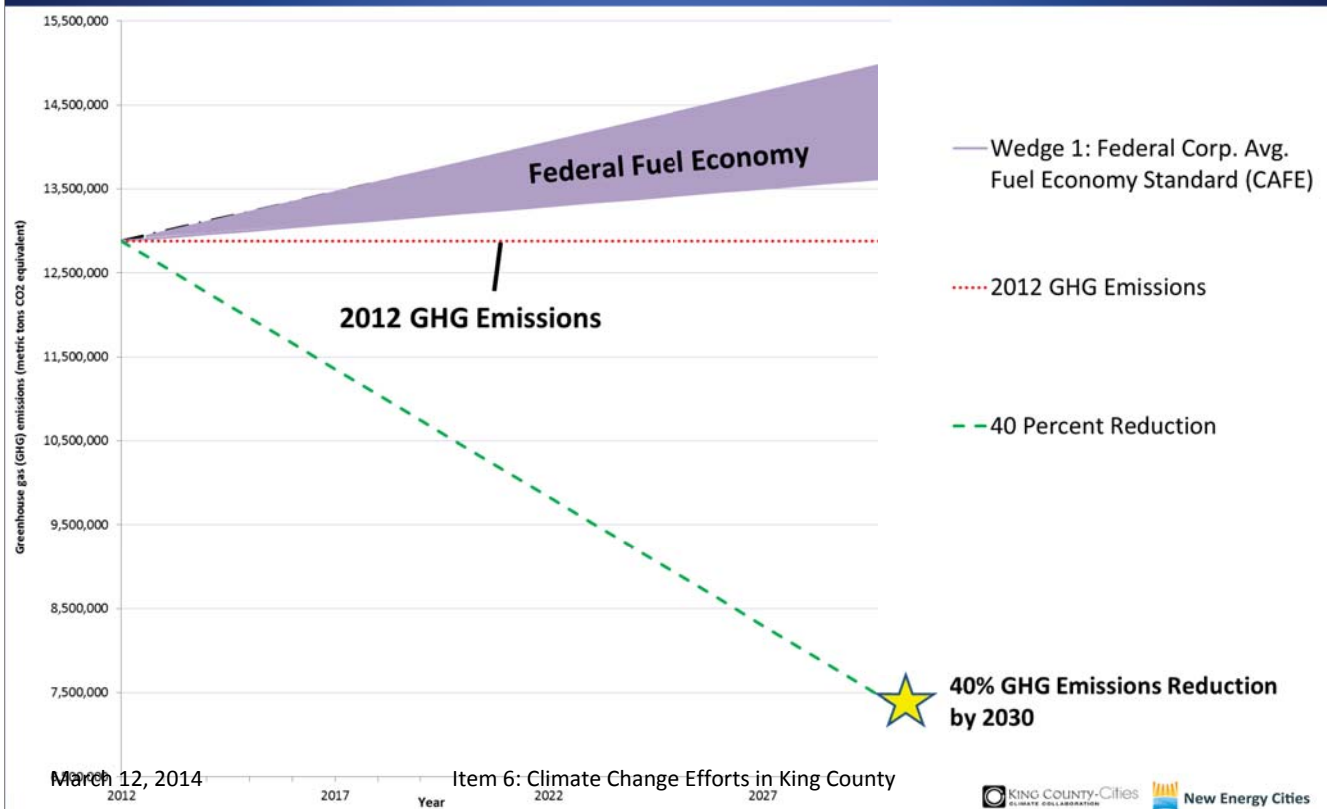
40 Percent Reduction by 2030: What Will It Take?

First we estimated the greenhouse gas (GHG) emission reduction due to three existing federal & state laws

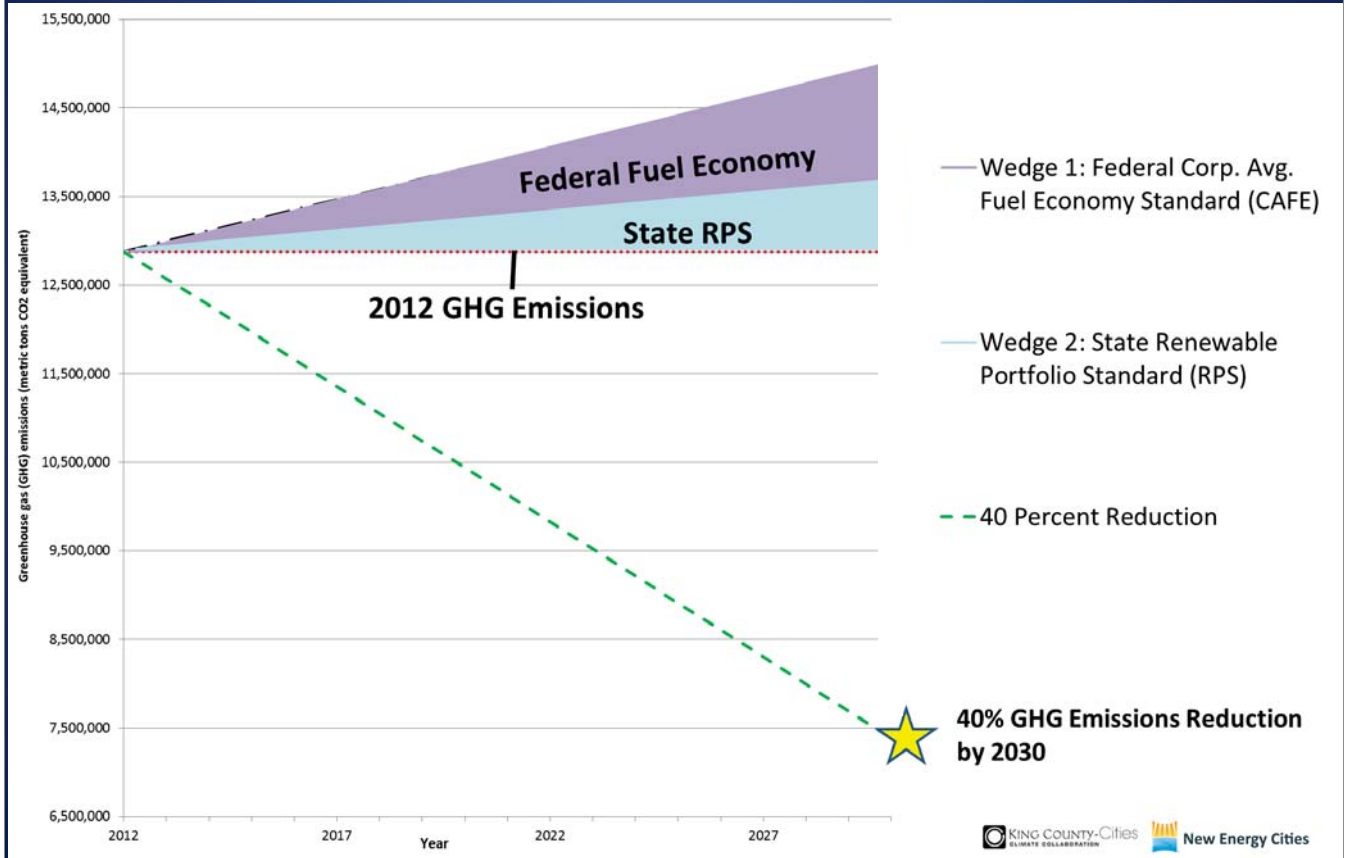
Level	Sector	Law or Policy	What the Law or Policy Requires
Federal	Transportation	Corporate Average Fuel Economy Standard	Analysis assumes 2030 avg. fuel economy of 27.3 miles per gallon
State	Energy supply	Renewable Portfolio Standard	At least 15 percent of total fuel mix must come from renewable energy by 2020
State	Energy consumption	Washington State Energy Code	New buildings constructed in 2031 must use 70 percent less energy than new buildings constructed in 2006



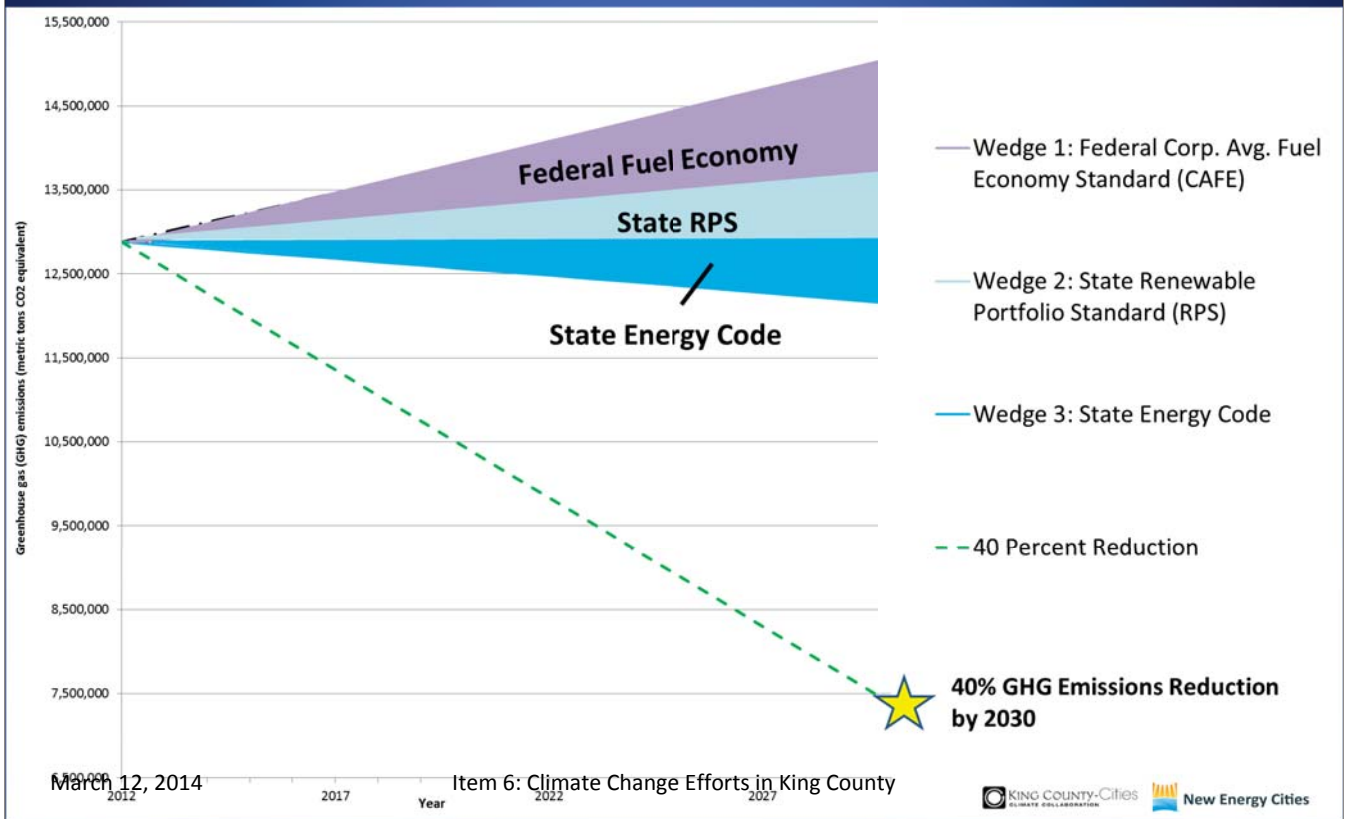
Reduction Due to Federal Vehicle Fuel Economy (CAFE) Standard



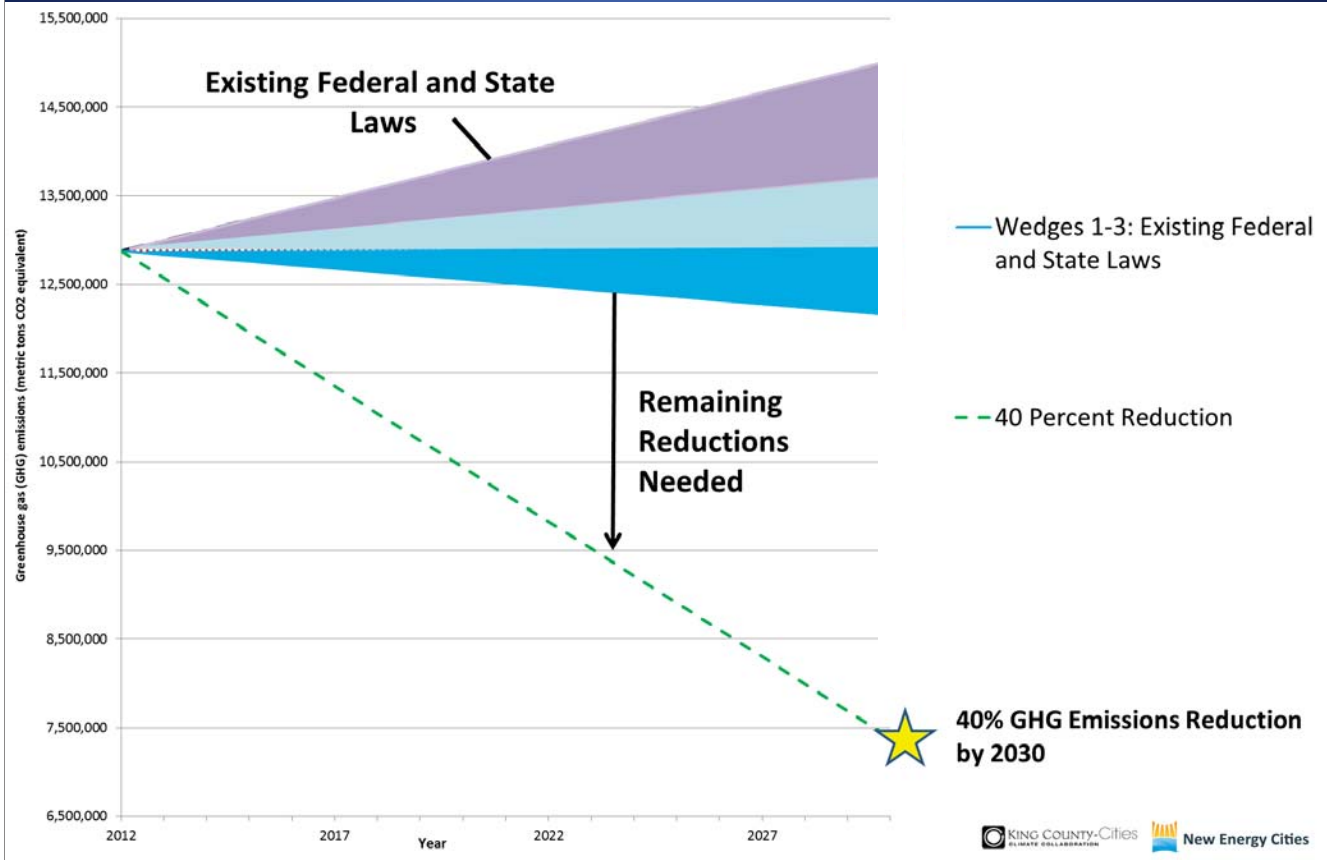
Reduction Due to State Renewable Energy Law



Reduction Due to State Energy Code



Reduction Due to Existing Fed. & State Laws

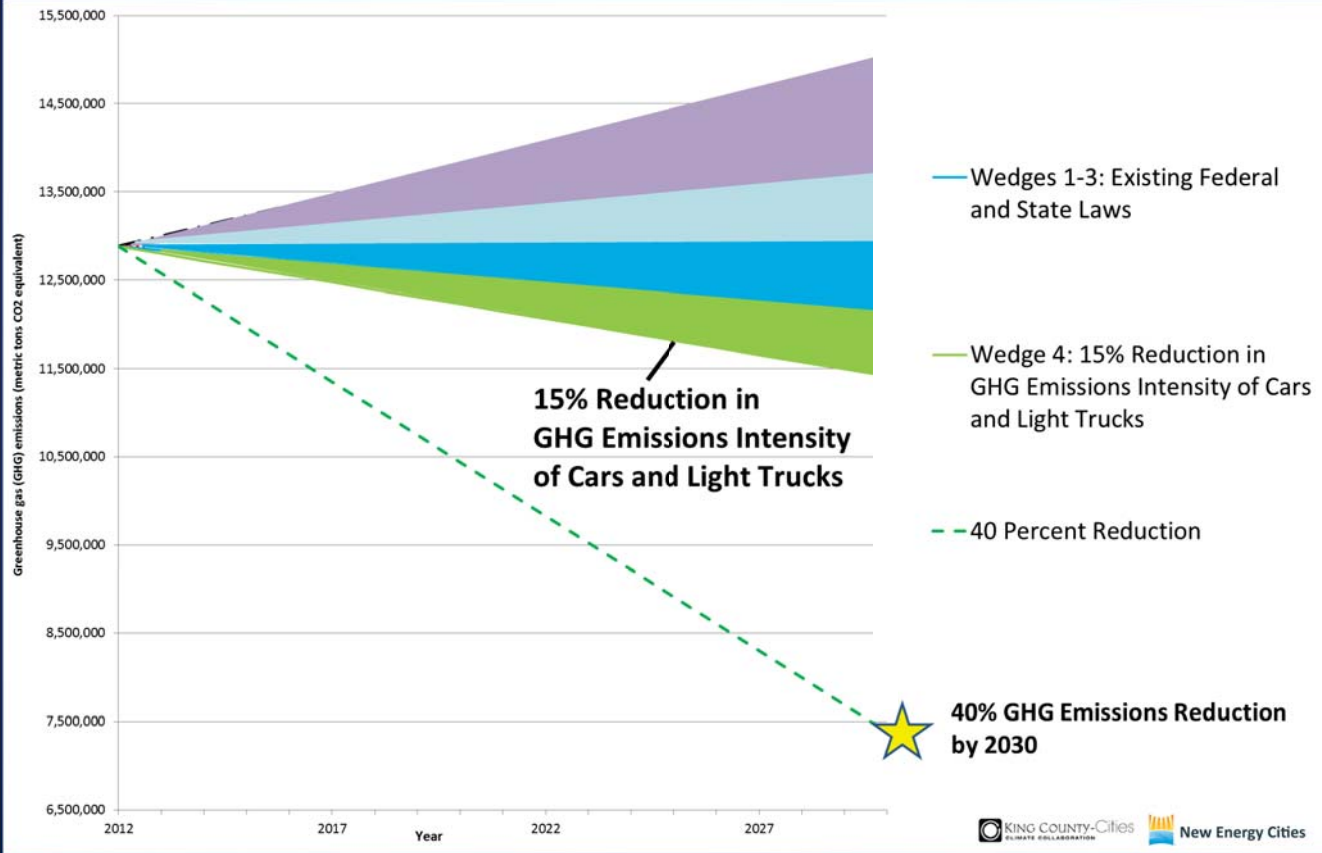


What Will It Take? (Part 2)

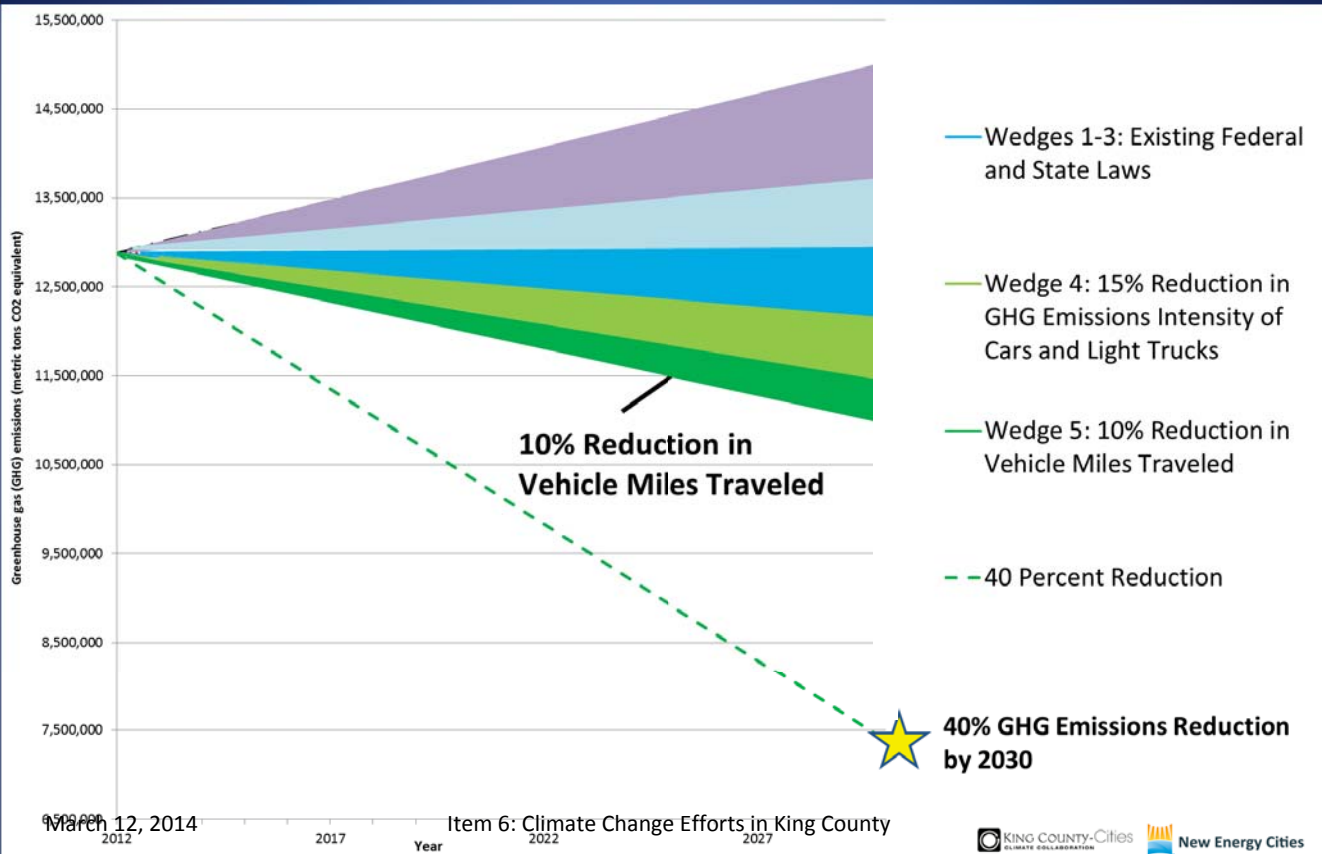
We then estimated the GHG emission reduction associated with strategies in three areas, consistent with national best practices

Category	80x2050 Pathways	Potential Pathways for King County Cities
Transportation	<ul style="list-style-type: none"> 25% reduction in transportation GHG emissions overall 25-38% percent reduction in emissions per VMT by 2030 Annual net decreases in VMT 	<ul style="list-style-type: none"> 15% reduction in vehicle GHG emissions intensity by 2030 (less ambitious than 80x50 pathway) 10% reduction in vehicle miles traveled by 2030 (less than State of WA policy goal)
Energy efficiency	<ul style="list-style-type: none"> Net zero emissions in new buildings by 2030 15-25% emissions reduction in existing buildings by 2030 	<ul style="list-style-type: none"> Net zero emissions in new buildings by 2030 (per city code authority) 25% reduction in energy use from existing buildings by 2030 (incl. natural gas consumption for heating)
Renewable energy	<ul style="list-style-type: none"> Electricity and heating supply is 80-90% renewable energy 	<ul style="list-style-type: none"> 90% renewable energy use countywide (incl. hydro) & no coal in electricity by 2030

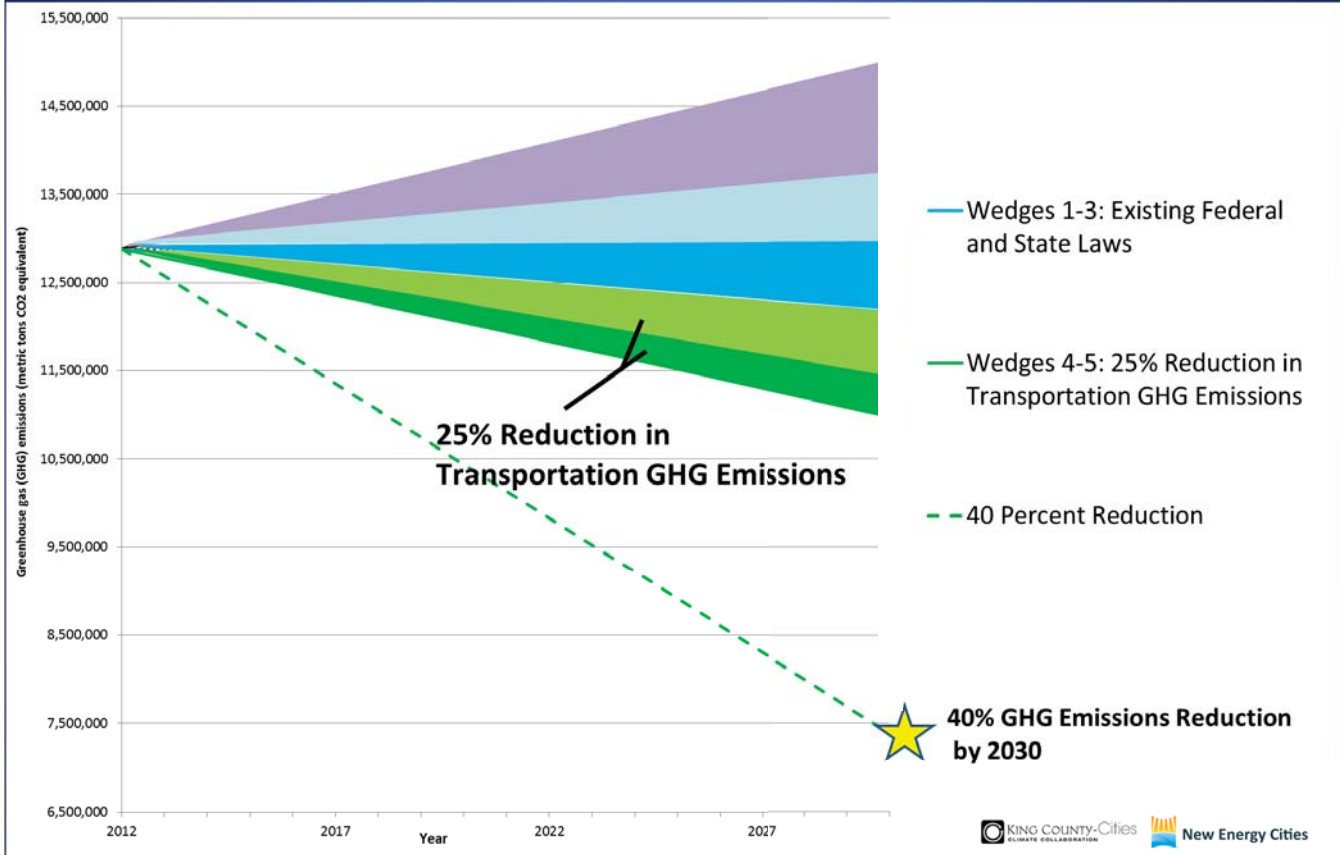
15% Red. in Vehicle Emissions Intensity



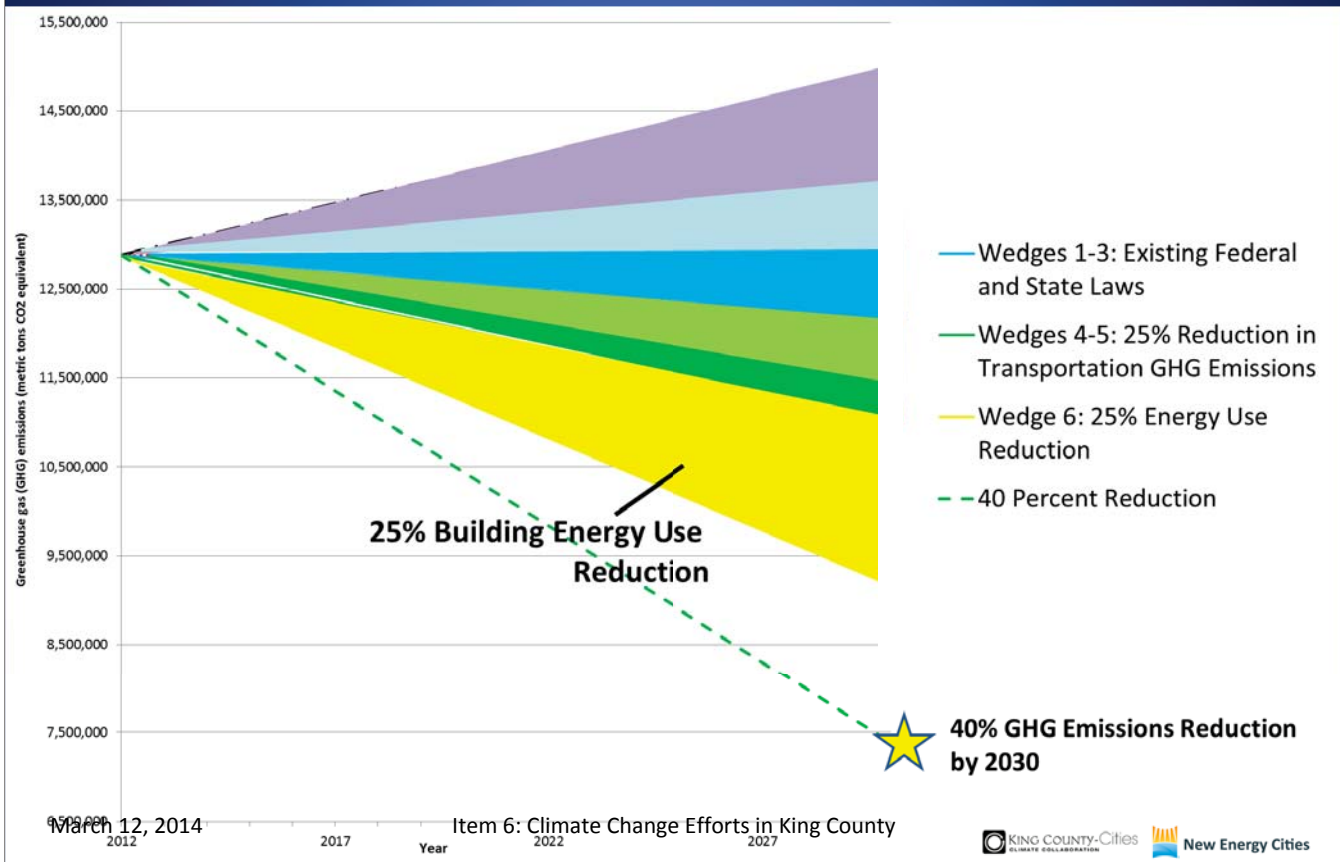
10% Reduction in Vehicle Miles Traveled



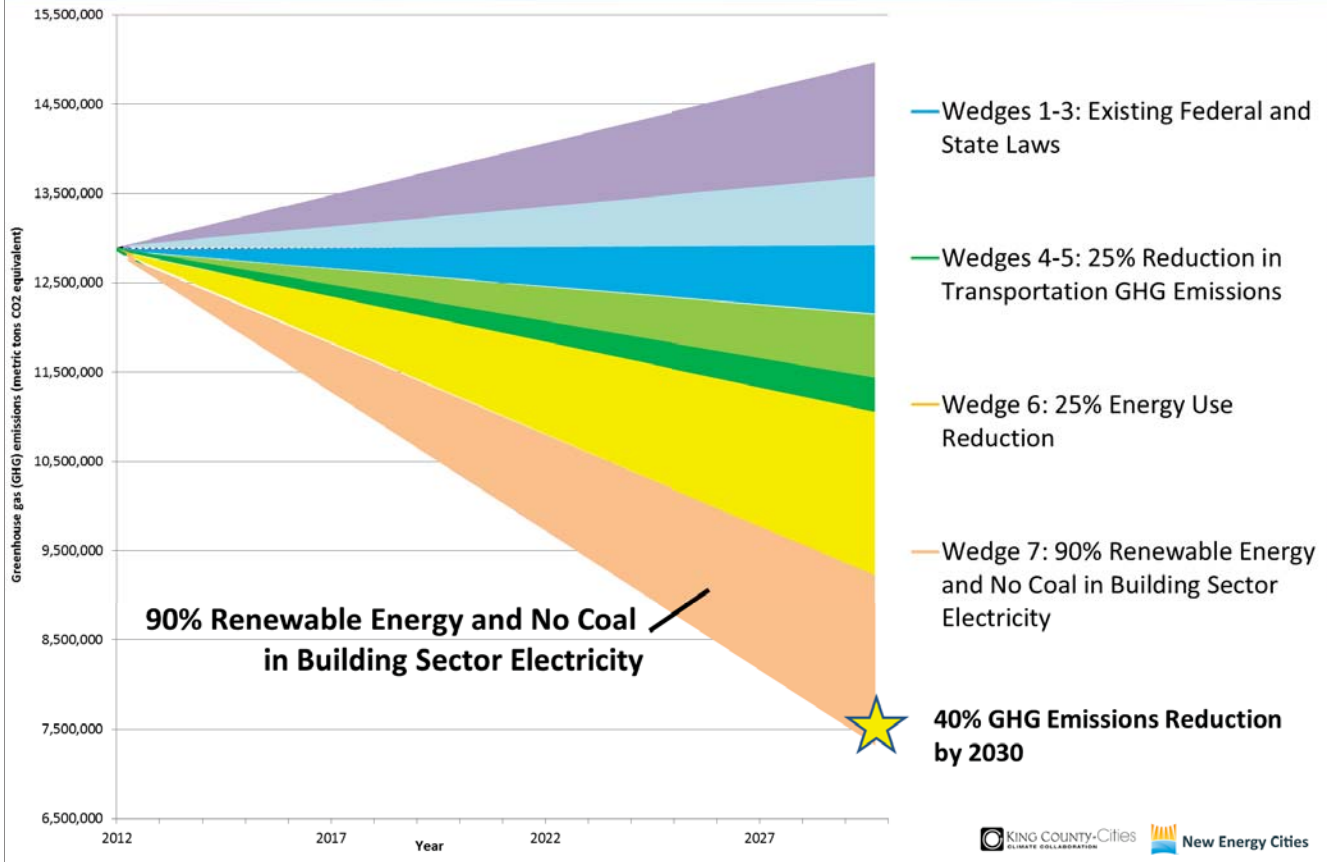
Combined: 25% Red. in Transportation GHG



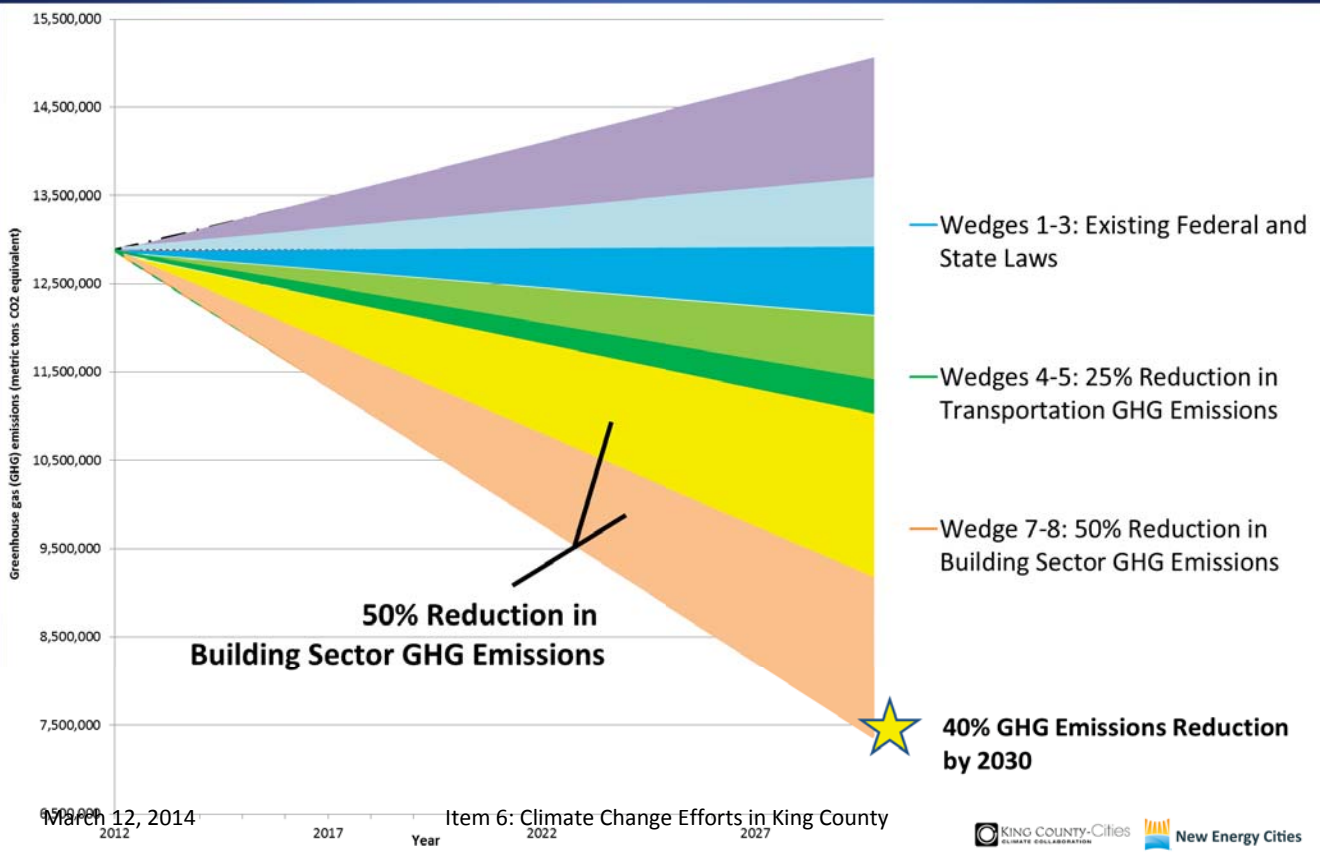
25% Building Energy Use Reduction



90% Renewable Energy Use and No Coal



Combined: 50% Red. in Building Sector GHG



Pathways to 40x30:

Sample County-City Reduction Strategies



Federal and State Action

Pathway: Support federal & state action to reduce GHG emissions

- Support implementation of Washington State Energy Code and Renewable Portfolio Standard
- Support adoption of proposed statewide clean fuel standard

Transportation and Land Use

Pathway: At least 25% reduction in transportation GHG emissions

- Secure funding to sustain and expand transit in King County, with goal of doubling public transit service by 2040
- Build on existing partnerships to expand use of low/zero-emission vehicles



Pathways to 40x30:

Sample County-City Reduction Strategies



Energy Sources

Pathway: 90% renewable energy and no coal in electricity

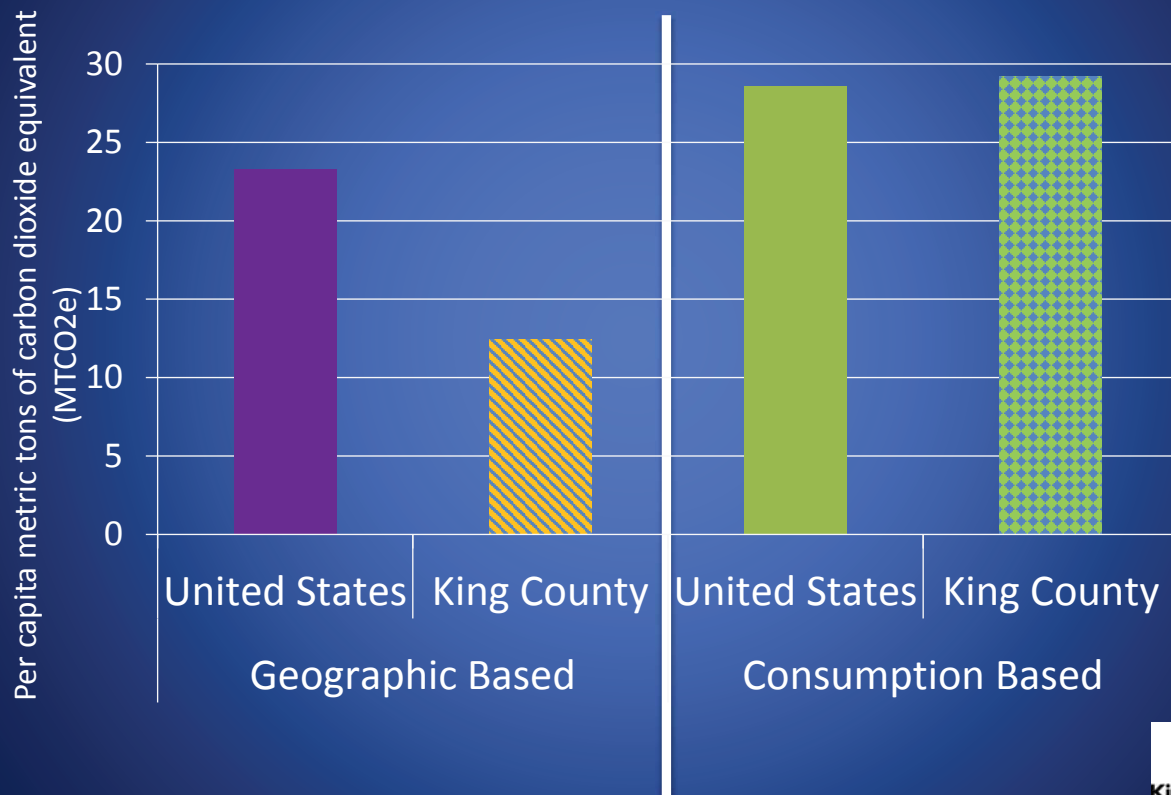
- Partner w/ local utilities to help transition to increasingly renewable energy resources, meet demand through energy efficiency, and phase out fossil fuels

Green Building and Energy Efficiency

Pathway: Reduce energy use in existing buildings 25% by 2030, and achieve net zero energy use in new buildings by 2030

- Develop a multi-city partnership to build a more robust regional retrofit economy, expanding on existing residential and commercial programs
- Lead the way to “net zero” through continued innovation in benchmarking, codes, ordinances, and partnerships that focus on building performance

“Other” GHG Emissions in King County



“Other” GHG Emissions Sample County-City Reduction Strategies

Consumption and Materials Management

- Increase waste prevention, reuse, and recycling outreach and education



Forests and Farms (Carbon Sequestration)

- Partner on Transfer of Development Rights initiatives to focus development within the Urban Growth Area, reduce development pressure on rural lands, and protect resource lands



Government Operations & Infrastructure

- Partner to implement sustainable purchasing efforts, such as recycled paper policies and clean vehicle fleet standards, and green infrastructure



General Findings



- Deep emissions reductions are ambitious but feasible
- Existing laws are important, but they alone will not achieve the goal
- State, regional, and local levers of change are all essential—and available— to meet 2030 & 2050 goals
- Collective local action is needed to meet ambitious GHG reduction targets

Achieving 40x2030 and 80x2050 is possible, but requires bolder, more organized action



Thank you!

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