Climate Mitigation in a Growing City: A Case Study from Issaquah, WA

National Academy of Sciences Workshop

May 29, 2013

New Energy Cities
Pioneering the Clean Energy Economy in the Northwest

Agenda

- New Energy Cities Introduction
- Climate Mitigation in a Growing City- Issaquah, WA Case Study
- Observations

Climate Solutions Mission

Accelerate *practical, profitable* solutions to global warming by:

- ✓ Galvanizing leadership
- ✓ Growing investment
- ✓ Bridging divides

Make the Northwest a national and world leader in the clean energy economy

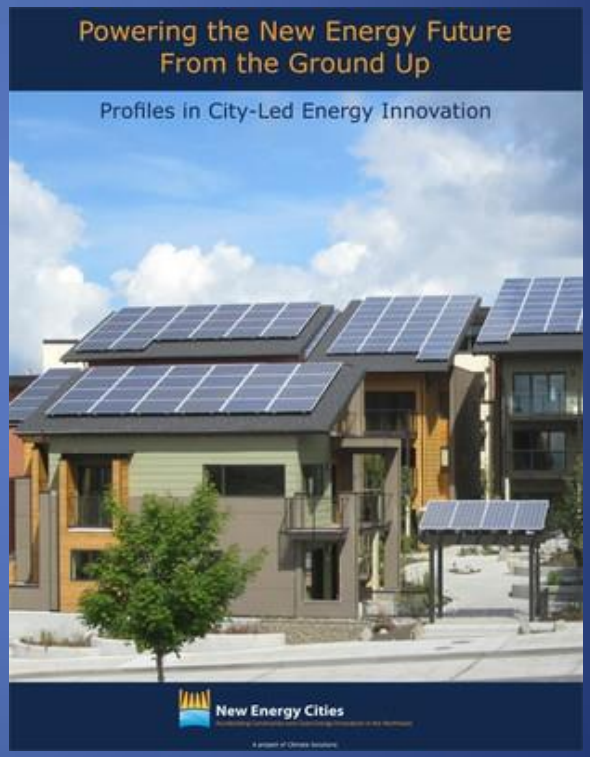
New Energy Cities Program

Living laboratory of vanguard small/medium-sized cities reducing greenhouse gas (GHG) emissions by accelerating climate-smart, clean energy solutions in:

- Highly efficient buildings
- Renewable energy
- Eco-mobility
- Smart technology

City-Led Clean Energy Innovation

- City-led clean energy innovation in communities under 250,000 population
- Innovation & bold leadership across the country
- Cities embracing climate solutions for their economic value as much as for climate benefits



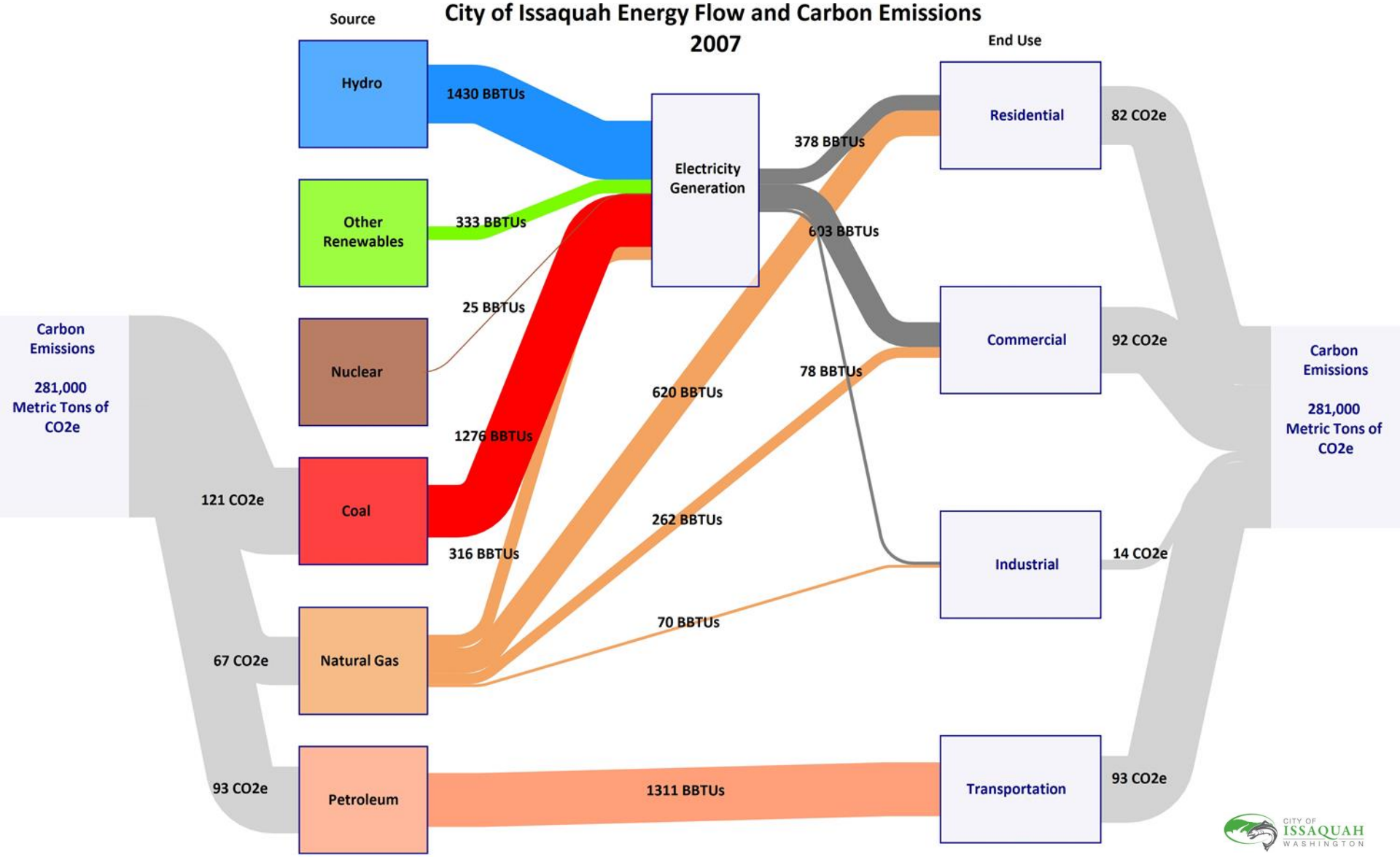
New Energy Cities Approach

1. Set aggressive, attainable GHG targets over 20-30 year period
2. Do GHG math– and create Energy Map and Carbon Wedge graphics— to depict how community can reach targets
3. Create Sustainable Energy Strategies that complement local comprehensive plans
4. Assess GHG reduction potential of tactics in the built environment, transpo, waste mgt, wastewater, and carbon storage
5. Align clean energy efforts of geog. clustered communities w/ state, regional, and utility policies/programs

Issaquah, WA

- Bedroom community in Eastside Puget Sound with dramatic residential & commercial growth projections for coming decades
- Comprehensive Plan goal of reducing GHG emissions 80 percent below 2007 emissions level by 2050
- Energy map & carbon wedge analysis to chart course to meet goal

DRAFT
City of Issaquah Energy Flow and Carbon Emissions
2007

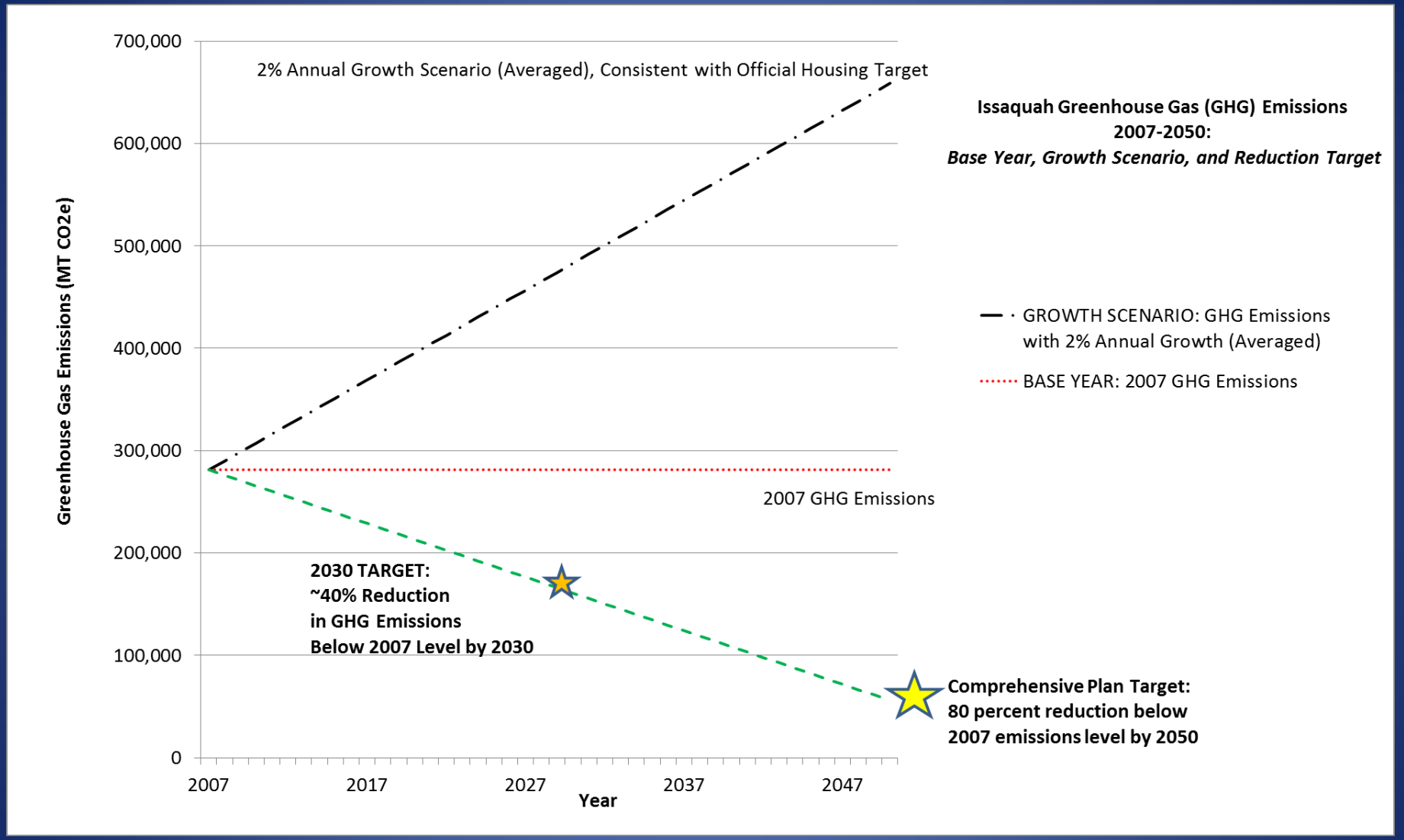


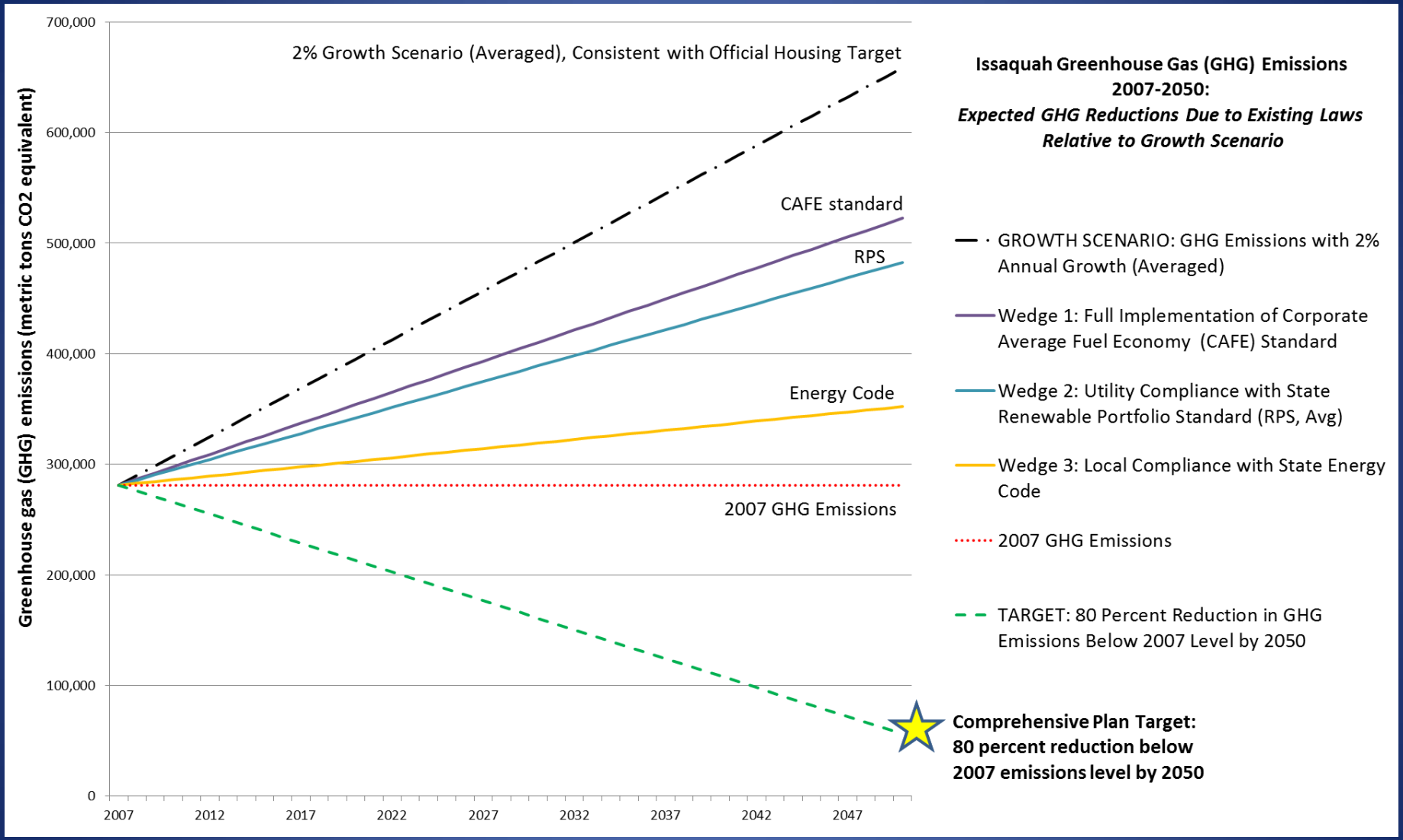
Data sources: PSE, City of Issaquah, PSRC.

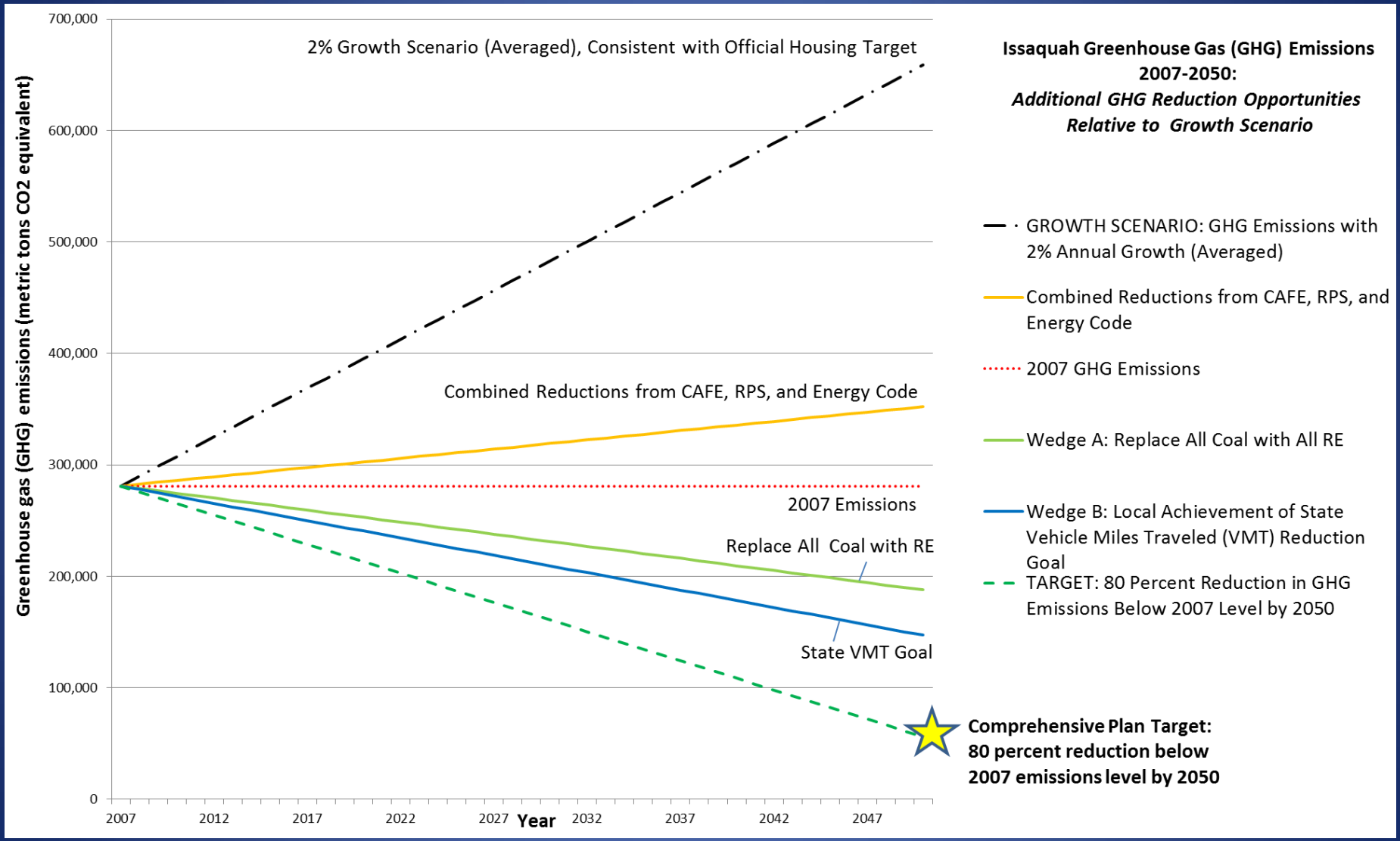
Notes: 1) Boxes are not proportionally sized. 2) Energy flows and carbon values were calculated based on total fuel converted to electricity. 3) CO2e refers to carbon dioxide equivalent, as a common representation of greenhouse gas emissions. All CO2e amounts in thousands of metric tons, except for the total figures.

CITY OF ISSAQUAH WASHINGTON

New Energy Cities


Issaquah Greenhouse Gas (GHG) Emissions
2007-2050:
Base Year, Growth Scenario, and Reduction Target
Greenhouse Gas Emissions (MT CO2e)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2007
2017
2027
2037
2047
Year
2% Annual Growth Scenario (Averaged), Consistent with Official Housing Target
2007 GHG Emissions
2030 TARGET:
~40% Reduction
in GHG Emissions
Below 2007 Level by 2030
Comprehensive Plan Target:
80 percent reduction below
2007 emissions level by 2050
GROWTH SCENARIO: GHG Emissions with 2% Annual Growth (Averaged)
BASE YEAR: 2007 GHG Emissions


Issaquah Greenhouse Gas (GHG) Emissions 2007-2050:
Expected GHG Reductions Due to Existing Laws Relative to Growth Scenario
Greenhouse gas (GHG) emissions (metric tons CO2 equivalent)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2007
2012
2017
2022
2027
2032
2037
2042
2047
2% Growth Scenario (Averaged), Consistent with Official Housing Target
CAFE standard
RPS
Energy Code
2007 GHG Emissions
GROWTH SCENARIO: GHG Emissions with 2% Annual Growth (Averaged)
Wedge 1: Full Implementation of Corporate Average Fuel Economy (CAFE) Standard
Wedge 2: Utility Compliance with State Renewable Portfolio Standard (RPS, Avg)
Wedge 3: Local Compliance with State Energy Code
2007 GHG Emissions
TARGET: 80 Percent Reduction in GHG Emissions Below 2007 Level by 2050
Comprehensive Plan Target: 80 percent reduction below 2007 emissions level by 2050


Issaquah Greenhouse Gas (GHG) Emissions 2007-2050:
Additional GHG Reduction Opportunities Relative to Growth Scenario
Greenhouse gas (GHG) emissions (metric tons CO2 equivalent)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2007
2012
2017
2022
2027
2032
2037
2042
2047
Year
2% Growth Scenario (Averaged), Consistent with Official Housing Target
Combined Reductions from CAFE, RPS, and Energy Code
2007 Emissions
Replace All Coal with RE
State VMT Goal
GROWTH SCENARIO: GHG Emissions with 2% Annual Growth (Averaged)
Combined Reductions from CAFE, RPS, and Energy Code
2007 GHG Emissions
Wedge A: Replace All Coal with All RE
Wedge B: Local Achievement of State Vehicle Miles Traveled (VMT) Reduction Goal
TARGET: 80 Percent Reduction in GHG Emissions Below 2007 Level by 2050
Comprehensive Plan Target:
80 percent reduction below
2007 emissions level by 2050

Carbon Wedge Findings

- Existing laws are critical drivers, but they alone will not stabilize emissions
- State, regional, and local levers of change are all essential to meet the 2050 goal
- City will need to implement new actions on its own, and must also band together on others that require broader action

Achieving 80 percent reduction below 2007 by 2050 is possible, but requires bolder, more organized action

On the Cutting Edge

Statewide Energy Efficiency Collaborative

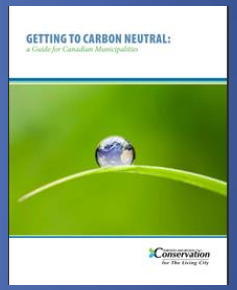
An Alliance to Support Local Government

California & Massachusetts

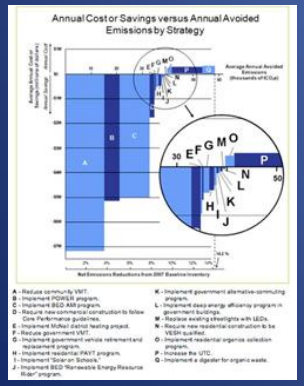
Toronto

A low carbon infrastructure plan for Toronto, Canada

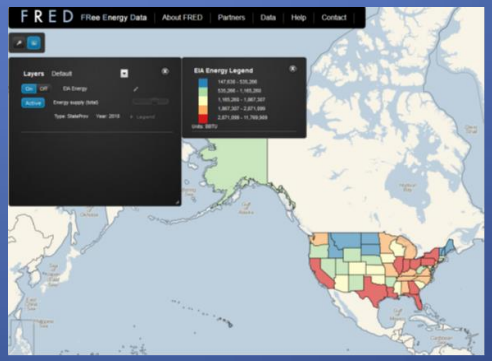
Lorraine Sugar and Christopher Kennedy



THE CarbonNeutralCityPlanner



Burlington, VT



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Thank you!

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Photo credit: Historic Shell Station on Slides 1, 7 and 14 by New Era Photography

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