

CEP Scenario A

Home and Buildings

- All Buildings
 - *45% of all energy use in City*
 - *Efficient renovation of 2.6% of building stock per year*
 - *New construction more efficient - 50% of current code by 2050*
 - *Selective densification*
- Home and Building Energy Performance Labeling
 - *“Aggressive” voluntary approach from 2011*
 - *Use ASHRAE/EU approach*
- Single Family Homes
 - *Standardized renovation packages financed by owner & City or HBPW*
 - *2013 to 2033 – “Moderate” package – 53% efficiency*
 - *2034 to 2050 – “High efficiency” package – 66% efficiency*
 - *Facilitated by neighbourhood or other community groups*
 - *AC and Refrigerator exchange programs*
- Non-residential, Large MFH and Retirement Communities
 - *Public buildings and churches act as living examples*
 - *Early adopters of Energy Performance Labeling*
 - *Equal focus on both efficient operation and construction*
 - *Energy master planning – clusters; major renovations; large developments*

Systematically Raise Efficiency

CEP Scenario A

Industrial and City Energy Services

- Tailored Industrial Energy Services
 - *20MW CHP phased with Battery Cluster growth*
 - *District heating services using CHP, existing boilers and waste heat*
 - *Environmental services for Battery Cluster for VOC elimination**
 - *Additional utility and efficiency services tailored to investors' needs*
 - *Up to 1.0 % efficiency/year based on corporate programmes*
- District Heating
 - *Develop district heating services north from 24th Street*
 - *“Anchor tenants” – Hope College / Hospital / Aquatic Center / City*
 - *Snow melt services as option in heating service package*
- City Energy Supply
 - *Maintain existing solid fuel plant through 2050*
 - *Add 55MW CCGT De Young Site in three phases by 2026*
 - *Configure CCGT to supply District Heating*
 - *“Green Power” sourcing Landfill (10MW)*

Extended Opportunities for HBPW

CEP Scenario A

Transportation and Enabling Strategies

- Transportation
 - *Efficiency gains from market evolution*
 - *Revised Federal CAFÉ Standards*
 - *Weight reduction from new materials*
 - *Trend to smaller vehicles*
 - *Drive-train efficiency increases*
 - *Efficiency gain from urban design and city services*
 - *Modest densification combined with mixed use*
 - *Snow melt extends use of walkable neighborhoods*
 - *Opportunity for experimentation*
 - *Biodiesel / Ethanol*
 - *Tied with economic development / University*
- Training, Education and Outreach
 - *In development*
- Economic Development Support
 - *In development*
- Incentives, Regulatory, Business Models
 - *In development*

CEP Scenarios B and C

■ Scenario B

- *CEP Scenario A plus...*
- *24MW of Solar PV to eliminate summer peak – start in 2012 complete by 2050*
- *Add 20MW Biomass Generating Block after 2030 using bio-gasification*
- *Blend bio-gas/natural gas starting in 2013 and leveling off at 10% by 2023 for CHP and CCGT*
- *Add 37 MW_{nom} Wind by 2020*

■ Scenario C

- *CEP Scenario B with ...*
- *Add 70 MW Solid Fuel with 30% biomass by 2050*
- *CCGT not implemented*

All Scenarios Focus on Efficiency