WASHINGTON DC

Unless otherwise stated, all data sources were for 2013

Oil

- Oil consumption includes gasoline, diesel, fuel oil for heating, and oil used in electricity generation (including powering electric public transit).*
- Gasoline and diesel consumption was obtained from Washington DC's 2013 Greenhouse Gas (GHG) Inventories and multiplied by average cost of gasoline and diesel for the Central Atlantic region, as reported by the US Energy Information Administration (EIA).
- Fuel oil consumption in the residential sector was obtained from Washington DC's 2013 GHG Inventories and multiplied by average cost per gallon in the residential sector in the Central Atlantic region, as reported by EIA.
- Fuel oil consumption in the non-residential sector was obtained from Washington DC's 2013 GHG Inventories and multiplied by the average heating oil wholesale price per gallon in the Central Atlantic region in 2014, as reported by EIA.

Natural Gas

- Natural gas consumption includes natural gas for heating and electricity generation (including powering electric public transit),* and natural gas and liquefied petroleum gas (LPG) for transportation.
- Natural gas consumption for heating was obtained for residential and non-residential sectors from Washington DC's 2013 GHG Inventories, and multiplied by the average natural gas residential and commercial sales price in the PEPCO service territory, as reported by EIA.
- Natural gas consumption for transportation was obtained from EIA, and multiplied by average vehicle fuel cost in 2012, also from EIA.
- Liquified petroleum gasoline consumption for transportation was obtained from EIA and multiplied by average cost per gallon in the Central Atlantic region from the US Department of Energy's Alternative Fuels Data Center's Quarterly Clean Cities Alternative Fuel Price Reports. Costs of propane were averaged together from the four quarterly reports to produce the annual average.

Coal

- Coal consumption includes coal for electricity generation.*

* For all electricity calculations, amount of electricity consumed (non-residential and residential sectors) was obtained from Washington DC's 2013 GHG Inventories. To calculate costs, consumption was multiplied by Washington DC's average retail cost for each fuel per kWh from EIA, then multiplied by the fuel mix percentage for each fuel in the PEPCO and Washington Gas & Light Company service territories, as reported by the 2012 US Environmental Protection Agency (EPA) eGrid.

Where the Money is Going

- Oil: US data as reported by EIA.
- Natural gas: District of Columbia data as reported by EIA.
- Coal: District of Columbia data as reported by EIA.

Clean Energy Alternatives

- Wind: Assumes a 2-megawatt (MW) wind turbine, operating at an average .36 capacity factor (source: EIA), generates 6,307 MWh/year, and costs $3.5 million (source: Windustry). Assumes a

Assumes the average Washington DC household uses an average of 8,362 kwh per year, as reported by the Washington DC Public Service Commission.

- Solar: Assumes 5-kW system per household at $3.09 installed cost per watt (National Renewable Energy Laboratory (NREL).
- Electric Vehicles: Assumes $32,500 purchase price per vehicle, minus $7,500 federal tax credit = total purchase price: $25,000 per vehicle.

CLEVELAND

Unless otherwise stated, all data sources were for 2011

Oil

- Oil consumption includes gasoline, diesel, jet fuel, AV gas, marine vessel fuel and oil used in electricity generation (including powering electric public transit).*
- Gasoline and diesel consumption was obtained from Cleveland's 2010-2011 Greenhouse Gas (GHG) Inventory and multiplied by average cost of gasoline for Cleveland as reported by EIA and average cost of diesel for the Midwest Region as reported by EIA .
- Jet fuel consumption was obtained from Cleveland's 2011 GHG Inventory and multiplied by average cost for the State of Ohio, as reported by EIA.
- AV gas consumption was obtained from Cleveland's 2011 GHG Inventory and multiplied by average cost for the Midwest Region, as reported by EIA.
- Marine vessel fuel consumption was obtained from Cleveland's 2011 GHG Inventory and multiplied by average cost (averaged each week's cost per metric ton on the east coast) in the Transpacific Stabilization Agreement.

Natural Gas

- Natural gas consumption includes natural gas for heating and electricity generation.*
- Natural gas consumption for heating was obtained for the industrial, commercial and residential sectors from Cleveland's 2011 GHG Inventory. Natural gas sales prices for the industrial, commercial and residential sectors in the Dominion East Ohio service territory were reported by EIA.

Coal

- Coal consumption includes coal for electricity generation.*

*For all electricity calculations, amount of electricity consumed (industrial, municipal, commercial and residential) was obtained from Cleveland's 2011 GHG Inventory. Electricity consumed by the public transit and wastewater sectors is included in the commercial/industrial sectors. To calculate costs, consumption was multiplied by average cost for each fuel per kWh in the Cleveland Electric Illuminating Company and Cleveland Public Power service territories, as reported by EIA, then multiplied by the fuel mix percentage averages for the 2012 EPA eGrid ReliabilityFirst Corporation West (RFCW) region (using the 44114 zip code for both providers). For the street & traffic light sector, consumption was multiplied by average cost per fuel per kWh in the Cleveland Public Power service territory, then multiplied by the fuel mix percentage averages for the 2012 EPA eGrid RFCW region (using the 44114 zip code).

Where the Money is Going

- Oil: US data for 2011 as reported by EIA.
- Natural gas: State of Ohio data as reported by EIA.
- Coal: State of Ohio data as reported by EIA.

Clean Energy Alternatives

- Wind: Assumes that an 18-MW offshore wind project would provide about 10% of the electricity needs for 55,000 homes, as reported by Lake Erie Energy Development Corporation (LEEDCO). Assumes 1 home consumes approximately 8,916 MWh/year as reported by City of Cleveland's 2015 Aggregation RFP/Analysis (unpublished, obtained from the City). Assumes the cost of one 1-MW offshore wind turbine is $6.67 million, as reported by LEEDCO.
- Energy Efficiency: Assumes 30% energy efficiency upgrade per home, costing $7,500 per home.

- Trees: Assumes $250/tree (source: Cuyahoga County Urban Tree Canopy Assessment, City of Cleveland).

BOULDER
Unless otherwise stated, all data sources were for 2012

Oil
- Oil consumption includes gasoline and diesel.
- Gasoline consumption was obtained from Boulder's 2012 Energy Usage Dollar Value report (unpublished report obtained from the City) and multiplied by average cost of gasoline for the State of Colorado, as reported by EIA.
- Diesel consumption was obtained from Boulder's 2012 Energy Usage Dollar Value report and multiplied by average cost of diesel for the Rocky Mountain Region, as reported by EIA.

Natural Gas
- Natural gas consumption includes natural gas for heating and electricity generation.*
- Natural gas consumption for the residential and commercial/industrial/municipal sectors was obtained from Boulder's 2012 Energy Usage Dollar Value report. Natural gas cost for heating was obtained for the industrial and commercial sectors (combined and averaged), and residential sector in the State of Colorado, as reported by EIA.

Coal
- Coal consumption includes coal for electricity generation.*

*For all electricity calculations, amount of electricity consumed (industrial/commercial/municipal and residential sectors – industrial, commercial and municipal consumption was combined and averaged) was obtained from Boulder's 2012 Energy Usage Dollar Value report. To calculate costs, consumption was multiplied by average retail price by sector for the State of Colorado as reported by EIA. For all commercial and industrial end uses except public lighting, a combined average rate of $.0815/kWh was applied. For public lighting the industrial rate of $.0695/kWh was applied. These were then multiplied by the fuel mix percentage for each fuel in the Xcel Energy service territory, as reported by Xcel Energy.

Where the Money is Going
- Oil: US data as reported by EIA.
- Natural gas: State of Colorado data as reported by EIA.
- Coal: State of Colorado as reported by EIA.

Clean Energy Alternatives
- Solar: Assumes solar installations will be done through a group purchase solicitation, estimated to cost an average of $3.15 installed per watt for a typical 5-kW system.
- Electric Vehicles: Assumes $32,500 purchase price per vehicle, minus $7,500 federal tax credit and $5,000 State of Colorado tax credit, for total purchase price: $20,000 per vehicle.
- Clean Energy Retrofits: Replacing existing heating, ventilating and air conditioning (HVAC) systems with clean energy alternatives: Assumes $12,000 retrofit per home.

SOMERVILLE
Unless otherwise stated, all data sources were for 2014

Oil

- Oil consumption includes gasoline for commercial and residential vehicles, gasoline and diesel for municipal vehicles, fuel oil for residential and municipal heating, and oil used in electricity generation.*
- Gasoline and diesel consumption for municipal vehicles was obtained from Somerville's Energy Baseline (unpublished report prepared by the Metropolitan Area Planning Council, obtained from the City) and Massachusetts Energy Insight 2014, and multiplied by the cost of gasoline and diesel, as reported by Massachusetts Energy Insight 2014.
- Gasoline consumption for all other vehicles in Somerville was obtained by the total number of cars registered in Somerville in fiscal year 2015 as reported by the City's Traffic and Parking Department, and multiplied by average number of miles traveled per year in the United States as reported by EPA, multiplied by average gasoline mileage of cars in the US as reported by EIA, and multiplied by average cost of gasoline and diesel for the State of Massachusetts, as reported by EIA.
- Fuel oil consumption for heating includes residential and municipal use. Municipal consumption and cost was obtained from Massachusetts Energy Insight 2014. Residential consumption and cost were obtained from average heating oil use and costs in Massachusetts between 2010-2015, as reported by Massachusetts Energy and Environmental Affairs.

Natural Gas

- Natural gas consumption includes natural gas for heating and electricity generation.*
- Natural gas consumption for heating was obtained for the commercial and residential sectors as reported by the Somerville Energy Baseline (unpublished report, prepared by the Metropolitan Area Planning Council), and the costs were for the State of Massachusetts as reported by EIA.
- Natural gas consumption for heating for the municipal sector was obtained from the Somerville Energy Baseline and Massachusetts Energy Insight 2014.

Coal

- Coal consumption includes coal for electricity generation.*

*For all electricity calculations, amount of electricity consumed (commercial and residential sectors) was obtained from Somerville Energy Baseline (unpublished report, prepared by the Metropolitan Area Planning Council, obtained from the City) and Massachusetts Energy Insight. To calculate costs, consumption was multiplied by average retail cost for each source by sector in the NSTAR Electric service territory, as reported by EIA, then multiplied by the fuel mix percentage for each fuel, as reported by ISO New England. Amount of electricity consumed by the municipal sector and every end use except street and traffic lights was obtained from the Somerville Energy Baseline and Massachusetts Inventory. For street and traffic lights, consumption and cost was obtained from the Somerville Energy Baseline and Massachusetts Energy Insight 2014.

Where the Money is Going

- Oil: US data for 2013 as reported by EIA.
- Natural gas: State of Massachusetts 2013 data, as reported by EIA.
- Coal: State of Massachusetts 2013 data, as reported by EIA.

Clean Energy Alternatives

- Solar: Assumes $2.776 installed per watt after incentives for 7.3 kW system ("Solar to the People" Massachusetts solar study).
- Trees: Assumes $277 per tree (Massachusetts Office of Energy & Environmental Affairs).
- Extending the T: Assumes $425,531,915 per mile (source: Transportation and Infrastructure Department, City of Somerville).

MINNEAPOLIS
Unless otherwise stated, all data sources were for 2013

Oil
- Oil consumption includes gasoline, diesel, jet fuel and AV gas.
- Gasoline and diesel consumption for all end users except the Minneapolis-St. Paul International Airport was obtained from the 2013 Minneapolis Greenhouse Gas Inventory, and multiplied by average cost of gasoline in the State of Minnesota, as reported by EIA, or average cost of diesel in the Midwest Region, as reported by EIA.
- Gasoline, diesel and jet fuel consumed by the Minneapolis-St. Paul International Airport was obtained from the Minneapolis-St. Paul International Airport 2013 GHG Inventory and Initiatives Report, and multiplied by average cost of gasoline in the State of Minnesota as reported by EIA, average cost of diesel in the Midwest Region as reported by EIA, or average cost of jet fuel in the State of Minnesota as reported by EIA.
- AV gas consumption was obtained from the Minneapolis-St. Paul International Airport 2013 GHG Inventory and Initiatives Report, and multiplied by average cost of AV gas for the United States, as reported by EIA.

Natural Gas
- Natural gas consumption includes natural gas for heating and electricity generation.*
- Natural gas consumption for heating was obtained for the industrial, commercial and residential sectors from the 2013 Minneapolis Greenhouse Gas Inventory, and multiplied by average cost in the CenterPoint Energy service territory, as reported by EIA.

Coal
- Coal consumption includes coal for electricity generation.*

*For all electricity calculations, amount of electricity consumed by each sector was obtained from the 2013 Minneapolis Greenhouse Gas Inventory. To calculate costs for all end uses (residential and commercial/industrial/municipal) except public highway lighting, consumption was multiplied by average retail cost for each fuel per kWh as reported by Xcel Energy's 2014 Annual Report, then multiplied by the fuel mix percentage for each fuel in the Xcel Energy Upper Midwest service territory, as reported by Xcel Energy. Aggregate total costs for public lighting were obtained from the City of Minneapolis Property Services and the Minnesota Department of Transportation.

Where the Money is Going
- Oil: US data as reported by EIA.
- Natural gas: State of Minnesota data as reported by EIA.
- Coal: State of Minnesota data as reported by EIA.

Clean Energy Alternatives
- Solar: Assumes solar installations will be done through the "Made in Minnesota" Solar Incentive Program, which costs an average of $2.11 installed per watt for a 6-kW system ("Made in Minnesota" Solar Incentive Program).
- Energy Audit: Assumes that all 1-4 unit homes receive an Enhanced Home Energy Squad audit, and air sealing and attic insulation. Also assumes that 30% of homes receive wall insulation, and 15% receive a high-efficiency furnace. Average costs for wall and attic insulation were obtained from CenterPoint Energy's 2015 Air Sealing and Insulation (ASI) Program, and average furnace costs were

obtained from Home Advisor. Assumes that all multi-family residential properties receive energy upgrades based on mean cost per unit as provided by the Department of Commerce.

- Bus passes: Assumes $76 monthly Minneapolis/St. Paul Metro Transit pass for 374,609 residents (all Minneapolis residents who do not currently have Metro Transit passes, according to 2015 Metro Pass ownership data as reported by Met Council Revenue Operations).