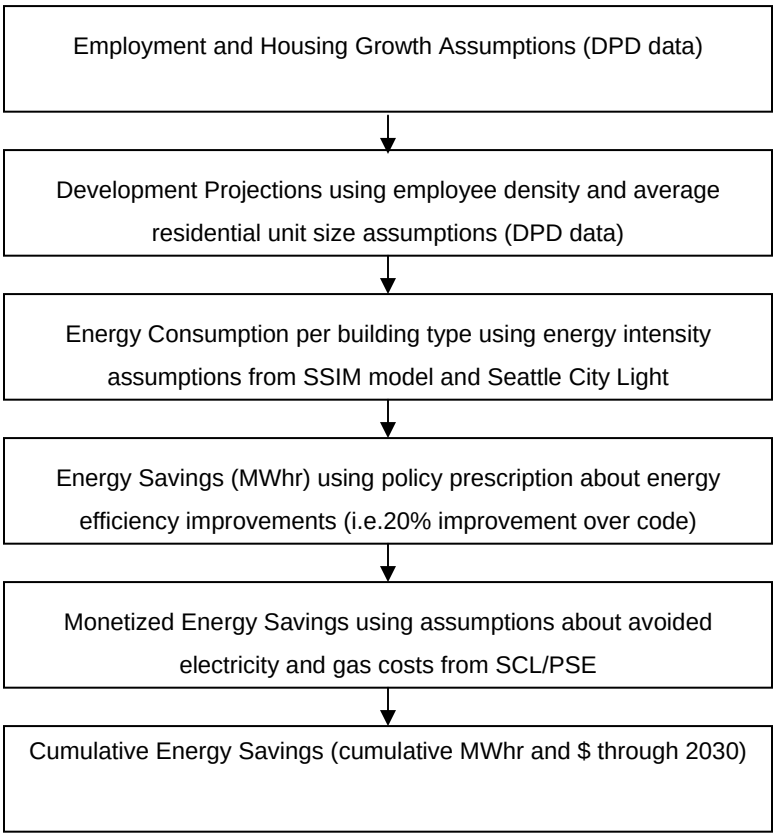
Cost Effectiveness Assumptions and Methodology

Model Structure



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Cost Effectiveness Calculations

(1) Direct Benefit Cost to City = $\frac{\text{Energy Savings (\$)}}{\text{Program Costs to City (\$)}}$

(2) Direct Benefit Cost to Developer = $\frac{\text{Financial Benefit to Developer (\$)}}{\text{Cost to Developer (\$)}}$

(3) Net Benefit Cost = $\frac{\text{Energy Savings (\$) + Financial Benefit to Developer (\$)}}{\text{Program Costs to City (\$) + Cost to Developer (\$)}}$

(4) Cost per MWhr Saved = $\frac{\text{Cost to City (\$)}}{\text{Energy Savings (MWhr)}}$

- *Energy Savings = Baseline (MWhr) x Savings (%) x Energy Cost ($/MWhr)*
  - Baseline Energy Consumption per Building Type = SSIM Model (kWhr) & NWEEA study
  - Energy Savings = Minimum threshold energy performance (% reduction)
  - Cost of Energy based on current rates, escalating at inflation
  - Energy efficiency improvements assumed as constant through 2030
- *Financial Benefit to Developer ($)*
  - Dependent on policy (i.e. density bonus = increase in revenue from rents/sales)
- *Program Cost to City ($) and Cost to Developer ($)*
  - Costs discounted and increased at rate of inflation

Assumptions (all costs calculated through 2030)

- *Energy*
    - Energy Intensity
        - Energy Intensity Assumptions were derived from SSIM model outputs, which calculated the kWhr/sf for four typical building types.
        - The residential figures were not included in the SSIM model and were taken from Northwest Energy Efficiency Alliance's study by RLW Analytics "RESIDENTIAL NEW CONSTRUCTION CHARACTERISTICS AND PRACTICES STUDY"
    - Electricity and Gas Consumption breakdown was calculated using the SSIM model outputs (residential electricity and gas breakdown was derived from Puget Sound Energy average household consumption data)
    - Cost Assumptions
        - Energy savings were calculated using avoided cost of generation
        - Electricity: $60/MWhr – Seattle City Light
        - Gas: $58/MWhr – Puget Sound Energy

- *Financial*
    - Inflation Rate
        - 3.4% based on Consumer Price Index
    - Discount Rate
        - 5.5% based on Seattle City Light/City of Seattle bond interest rate
        - Developer Discount Rate: 7% based on Seattle City Light

- *Development Projections*
    - Development Projections were calculated using Seattle Department of Planning employee density assumptions (sf of projected development/employee)
    - Development Costs were calculated using RS Means for typical buildings in Seattle
    - Developer Cost Premia for specified energy efficiency improvements were estimated using the SSIM model

- *City Overhead Cost Assumptions*
    - 3x average employee overhead cost – Seattle DPD data
    - 4.9% Cost of Living increase – Seattle DPD data