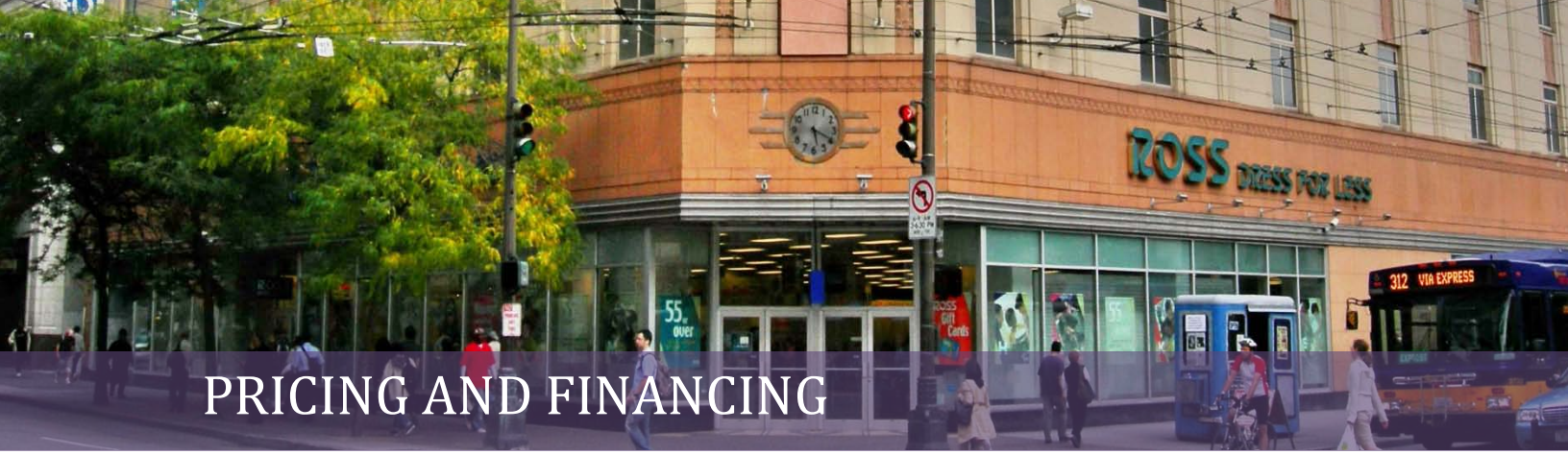


PRICING AND FINANCING

Eliminate barriers to financing and adjust energy and incentive price structures to make deep retrofits more cost-effective.

A number of the recommendations in this report reference a balancing between a call for deep energy reductions to meet carbon reduction goals and the practical reality that most retrofit decisions are made considering cost-effectiveness. Each of these other recommendations will have some level of success in implementation on its own, but the right energy pricing and efficiency incentive structures are key to widespread uptake of energy efficiency and carbon reduction activities. In fact, some strategies only become cost effective if such pricing and incentive programs are implemented. Added to these are financing tools that allow owners with various motivations and barriers to access the necessary capital to undertake efficiency upgrades. Without such "patient capital" financing mechanisms, it will be difficult to scale retrofit programs.

1. ENERGY PRICE STRUCTURING

Establish energy pricing structures in our utilities that incentivize conservation and help improve the customer's cost-effectiveness of deeper efficiency improvements. Examples to investigate could include rate tiers, rate increases, and connection pricing for conservation.

2. INNOVATIVE FINANCING OPTIONS

Ensure broad access to financing with alternative repayment structures by establishing on-bill, meter-based financing programs and, potentially, PACE (Property Assessed Clean Energy) financing.

3. OUTCOME-BASED INCENTIVES

Pilot and, if successful, establish utility incentive structures based on the actual energy savings of an energy upgrade, rather than the projected savings of individual measures. Also investigate what incentive level and structure promotes deep energy retrofits and move toward establishing the system(s).

KEY OUTCOMES

- Deep energy efficiency gains (including building envelope and HVAC improvements) become more cost-efffective to implement.
- Financial barriers to energy upgrades are significantly reduced.

Enabling Strategies*

* Emission reductions from incentives included with "Efficient Operations" strategies

POTENTIAL OPPORTUNITIES AND BARRIERS

- **Ratepayer Protection**: Seattle City Light needs to balance utility incentive levels with proper use of ratepayer dollars.
- **Legislative Barriers**: PACE financing and fuel-neutral meter-based financing through utilities would require state legislative action to implement. Currently, SCL could implement meter-based financing only for electrically-heated buildings.
- **Energy Price Escalations / Equity**: The City needs to ensure that eligible low-income households are enrolled in Seattle City Light's rate assistance program and that low-income weatherization programs are funded and working effectively.

GUIDING CONSIDERATIONS

- **Equity**: If energy price structuring results in price escalations for rates or connections, exceptions or assistance programs should be available to alleviate the impact on low-income customers. The ultimate goal is that energy efficiency improvements will lower customer bills, even in the face of potential rate escalations.

PILOT PROJECT	**PERFORMANCE/OUTCOME-BASED UTILITY INCENTIVES** Seattle City Light is coordinating with other utilities to pilot a performance-based utility incentive program that would pay incentive dollars over time as actual energy savings are verified, rather than paying an up-front incentive based on the projected savings of individual measures.

EFFICIENT OPERATIONS

Information and market-based programs combine with energy upgrade programs to optimize building energy performance.

The majority of the buildings we will see in Seattle in 2050 have already been built. Making deep efficiency gains in our existing building stock is imperative to meeting the City's carbon neutrality goals. It is also a challenging sector to address, as existing buildings do not traditionally trigger the City's regulatory authority unless they pursue a renovation or remodel. There are some exceptions, such as the City's Benchmarking and Disclosure program. The TAG does see a role for mandates to reach a broad number of buildings – such as requiring efficiency or operational improvements at certain times. However, it places a stronger emphasis on information-building, incentive programs, and financing mechanisms. Expanding the availability of energy performance data and establishing a retrocommissioning program help both those selecting a space to occupy and those managing buildings. Community Power Works and a tax exemption for rental multifamily help deliver incentives and assistance for building retrofits.

These programs must be coupled with the tools to finance energy improvements as well as the right pricing and incentive mechanisms to make such improvements cost-effective. These tools are discussed more in the "Pricing and Financing" section.

1. BENCMARKING, DISCLOSURE, AND RATING

Expand the existing Benchmarking and Disclosure program to make benchmarked information more publicly available. Establish a home energy rating system at point of sale and share comparative energy use on bills for single-family homes.

2. MANDATORY IMPROVEMENTS

Require multifamily and commercial building owners to improve energy performance of buildings at established intervals (e.g. once per decade). Require home energy upgrades for single family homes at point of sale.. Stage the implementation of these programs to ensure information, financing tools, and incentive programs precede mandates.

3. RETRO-COMMISSIONING

Establish a voluntary retro-commissioning program to provide large multifamily and commercial building managers with the information and technical assistance to optimize building performance (this is an additional voluntary program to the point-of-sale mandate mentioned above).

4. COMMUNITY POWER WORKS

A three-year grant program is underway to establish and test community retrofit assistance programs touching a variety of building sectors. Utilizing lessons from this pilot, establish a long-term program providing assistance, financing as other tools to help achieve building retrofits.

5. RENTAL EFFICIENCY TAX EXEMPTION

Establish a property tax exemption program for existing rental housing owners who undertake significant energy retrofits.

KEY OUTCOMES

~30%

Estimated projected GHG reductions from buildings by 2050*

* Emission reductions from incentives

- Better informed buyers and tenants regarding energy performance. In the long-term, integrating energy knowledge into decision-making may increase the market value of energy efficiency.
- Better informed building energy managers
- Reduced energy use in existing buildings through cost-effective means, and therefore reduced energy bills
- Strong economic sector based on energy efficiency / energy performance

POTENTIAL OPPORTUNITIES AND BARRIERS

- **Real Estate Market**: Point-of-sale requirements for energy ratings or minimum upgrades should be crafted to avoid disruptions to the real estate market.
- **Funding**: Expanding and sustaining assistance programs requires a long-term commitment of funding or self-sustaining funding mechanisms.
- **Financing**: Without the appropriate "patient capital" financing mechanisms (e.g. meter-based financing or PACE financing), it will be difficult to scale retrofit assistance programs.

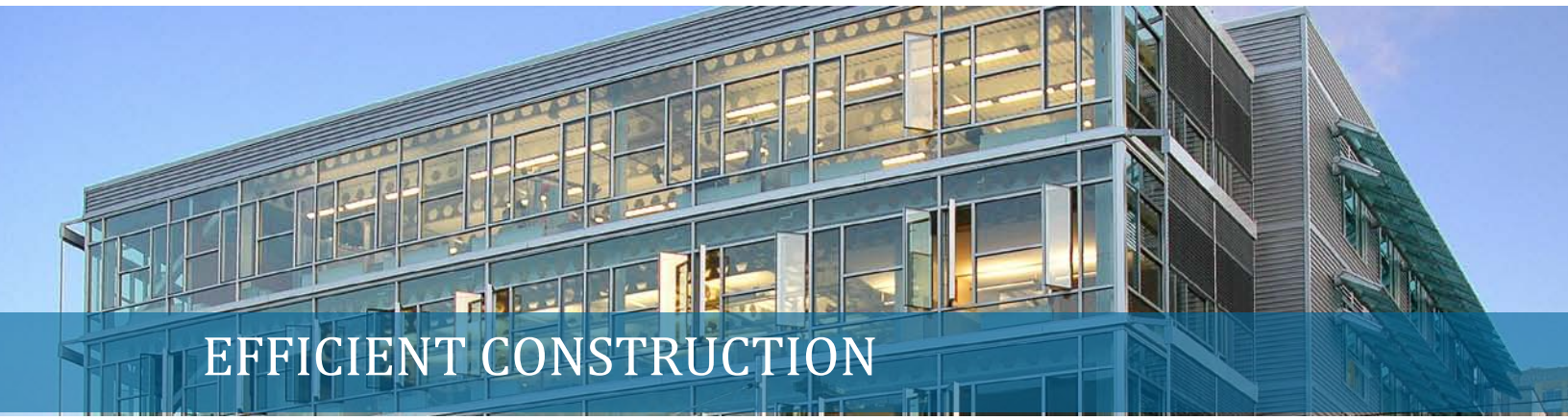
GUIDING CONSIDERATIONS

- **Equity**: Policies related to mandatory upgrades contain policies to address affordable housing.
- **Private Sector Collaboration**: Maximize market-based programs and policies and work closely with the private sector on regulatory approaches to address hard-to-influence market segments to ensure positive outcomes. Strategic implementation of regulatory programs would support and potentially enhance market-based approaches.
- **Lead by Example**: The City should lead by example in upgrading its facilities. Recent work to develop a Resource Conservation Management plan for City facilities is a step in the right direction.

PILOT PROJECT

RETRO-COMMISSIONING

Seattle City Light is currently developing a retro-commissioning program to pilot. Pending positive results from the pilot, scaling and expanding the models should be a next step.



EFFICIENT CONSTRUCTION

Buildings must be constructed and renovated to high efficiency standards.

The strategic point at which a City can most easily influence energy use in buildings is through the regulations placed on new construction and major renovations. The design, construction, and fuel sources of a new building have an obvious large impact on its energy peformance, and largely determine its future carbon impact. The energy code will continue to be at the core of the City's effort to reduce energy use and carbon emissions in new development. The State of Washington is already planning to incrementally increase the efficiency of the state energy code, and the TAG recommends the City continue to achieve an even higher bar with its own energy code. Until such a point where energy codes achieve deep – even carbon neutral – standards, programs like incentive zoning and fee-bates can encourge new construction to voluntarily achieve those standards. Finally, zoning codes have an influence on new construction by determining whether inherently more efficient buildng types (e.g. multi-unit buildings) will be constructed.

1. ENERGY CODE IMPROVEMENTS

Continually increase energy efficiency standards, and require an energy monitoring interface for all tenants.

2. OUTCOME-BASED ENERGY CODE

Move from a prescriptive code to an outcome-based code that demonstrates it is attaining the standards of the energy code.

3. INCENTIVE ZONING

Incentivize deep energy efficiency in construction through density (via floor-area ratio) bonuses, but balance this incentive with other objectives (e.g. affordable housing).

4. FEE-BATES

Structure development review fees to incentive deep green buildings, including energy performance as a key criterion. Reduce fees for buildings exceeding standards and raise fees for buildings meeting minimum standards.

5. ZONING FOR EFFICIENT BUILDING TYPES

Attached, multi-unit housing and business space are, on average, more energy efficient than their detached single-unit counterparts. Continue trend of up-zoning around urban centers, and consider options for expanding attached housing in a contextually sensitive way in single-family zones.

KEY OUTCOMES

- Reduced energy use in new construction and major renovations triggering code
- Flexibility in achieving energy code standards through an outcome-based approach
- Greater assurance that the energy code standard is being achieved by switching from prescriptive methods to measured performance

~22%

Estimated projected GHG reductions from buildings by 2050

POTENTIAL BARRIERS

- **Legislative Barriers**: State authorizing legislation is required for two purposes: (1) to allow local governments to amend energy codes in the residential sector; and (2) to allow permitting agencies flexibility in how they assign permit review fees.
- **Defining Performance Outcomes and Compliance Mechanisms:** Defining acceptable performance ranges of different building types could be a challenge in implementing outcome-based codes, given the differences within categories of building types, and the need to normalize for operating hours, occupancy, plug loads, weather, etc. Additionally, compliance mechanisms must be carefully designed to track compliance and make reasonable corrections without creating an undue burden or risk, and without creating inequity between existing and new buildings.

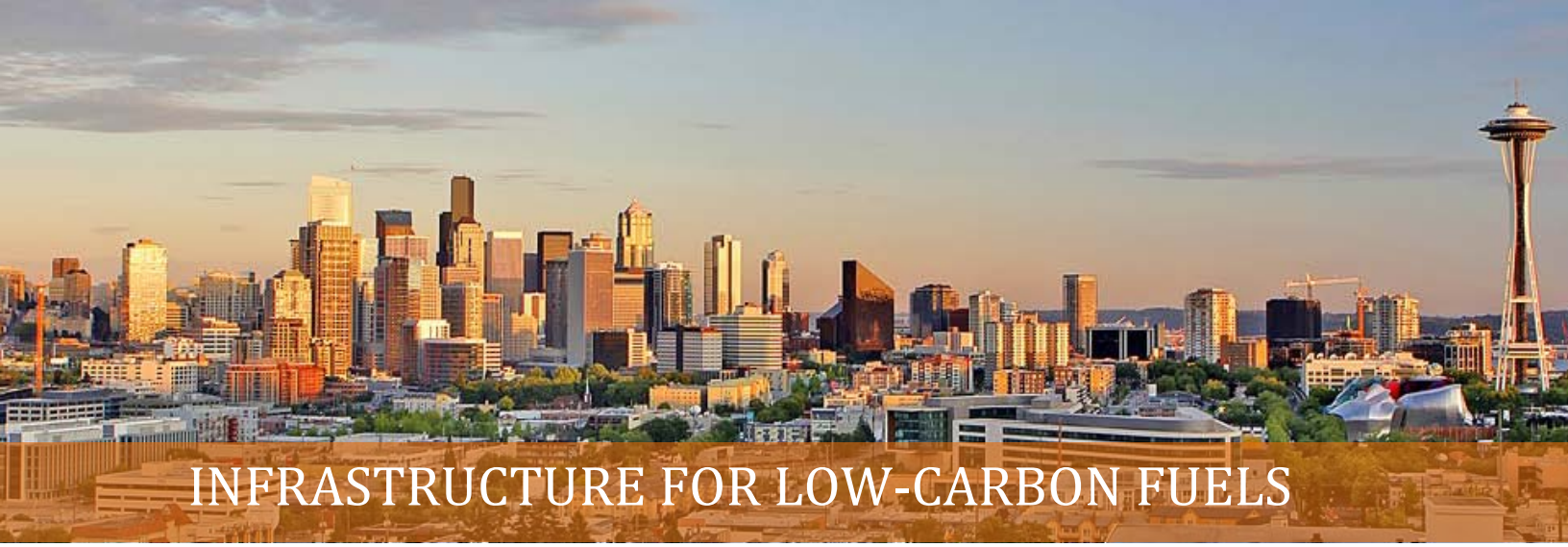
POTENTIAL OPPORTUNITIES

- **Improved Building Design:** Ensuring that buildings perform at their design level through outcome-based codes will help the design community understand which designs are most efficient and understand the impact that user behavior has on building performance.

GUIDING CONSIDERATIONS

- Balance incentives for efficient new construction with other community priorities, such as affordability.
- Stringent codes for renovations could have an unintended consequence of encouraging demolition instead of reuse for existing structures. These regulations should include flexibility and alternative compliance paths for historic structures.

PILOT PROJECT	**OUTCOME-BASED ENERGY CODE**
	An outcome-based code compliance path is currently being piloted for renovations. Once sufficient data is available to define acceptable performance standards for various building types, an outcome-based path should be piloted for new construction. The City should target 2020 for the post-pilot establishment of an outcome-based compliance option for new construction.



INFRASTRUCTURE FOR LOW-CARBON FUELS

Use district energy strategically to capture waste heat and renewable energy.

District energy systems can provide a platform for utilizing waste heat and renewable energy sources, and moving these resources around in a system to where and when they are most needed. Given the high cost of infrastructure, and that an electric alternative is carbon neutral, the TAG does not recommend district energy as a universal solution, but does feel it has a role in the City to utilize renewable and waste heat sources that are not feasible at an individual building scale.

The recommendations below are aimed at capturing and maximizing opportunities: for waste heat, for establishing synergistic land uses and infrastructure, and for utilizing the public right-of-way for ground source heating wells where communities can off-load their heat in the summer to stay cool, and use the stored heat in the winter.

1. WASTE HEAT RECOVERY
Develop district energy systems and incentive programs to capture and utilize waste heat generated from other processes or operations (e.g. industrial operations).
2. COORDINATED PLANNING AND SYNERGISTIC LAND USES
Integrate land use and infrastructure planning to maximize opportunities for heat exchange, such as through synergistic land uses, and optimizing infrastructure.
3. USE OF RIGHT OF WAY FOR ALTERNATIVE ENERGY
Allow the public right-of-way to be used for ground source heat wells, where appropriate, to provide heating and cooling to nearby buildings.

KEY OUTCOMES

- Expanded use of renewable fuels at a community scale
- Better capture and use of wasted heat, offsetting other energy production

~6%

Estimated projected GHG reductions from buildings by 2050

POTENTIAL BARRIERS

- **Infrastructure Cost**: Piping can constitute a significant cost for establishing a district energy system.
- **Compatible Building Systems**: Establishing connections between buildings and district energy systems requires compatible building heating systems – typically in the form of hydronic heating systems.

POTENTIAL OPPORTUNITIES

- **Large-Scale Renewables:** District energy systems allow for the integration of renewable fuel systems that are cost-prohibitive at the individual building scale.

PILOT PROJECT

FIRST HILL DISTRICT ENERGY STRATEGIC PARTNERSHIP

The City is currently undertaking a study to test the feasibility of a district energy system on First Hill supported by private investment. Based on results of the feasibility analysis, consider implementing a system supported by low-carbon renewable fuel sources and with limited public financial investment.