

District Energy for Portland: Laying the Groundwork for Implementation

Streamlining Portland's District Energy Regulations

March 31, 2011



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Final Report

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This material is based upon work supported by the Department of Energy under Award Number DE-EE0000923/000.

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Executive Summary

The City of Portland has set aggressive goals to reduce carbon emissions under its 2009 Climate Action Plan, and among the plan's key strategies is a goal to implement or expand a district heating and cooling system in Portland by 2012. District energy is simply a shared platform for heating and cooling multiple buildings from one or more centralized thermal energy plants via a system of underground hot or chilled water pipes. In the right application, some of the key value propositions for district energy include improved flexibility, reliability, energy security, environmental performance, cost savings and economic development. The global economic crisis, recent natural disasters and growing concerns about climate change have all served to heighten interest in district energy.

District heating and cooling may come from a variety of technologies and fuels, including waste energy and alternative fuels. The greater potential for using local technologies and fuels is one way in which district energy supports economic development and energy security. Some systems also use combined heat and power that supplies local thermal needs while simultaneously improving the diversity and efficiency of the regional electricity system. In some cases, combined heat and power can also improve local electrical system reliability. The sources of thermal energy for district systems will often change over time in response to changing technology, policy and market conditions. District energy can also support deep reductions in carbon emissions through economies of scale and integration of multiple types of loads, and the ability to tap energy sources not available or viable at individual building sites.

District energy is not new to Portland. Many institutional campuses such as Portland State University and Oregon Health and Science University among others use centralized heating and cooling systems to serve multiple buildings. The Brewery Blocks district cooling system is an example of a newer district energy system serving buildings with multiple owners and uses. While the technologies are relatively established and simple, the process for starting and growing new district energy systems that supply buildings with multiple owners and varied development timelines, while pursuing energy sources with both public and private benefits, can be complex and challenging. It requires strong vision, clear public policy and mechanisms to facilitate development and secure public benefits, and considerable coordination. There are many paths to successful development of a district energy system, and the most appropriate path will depend upon local conditions and circumstances unique to each development.



Recent studies have identified at least four areas in the City of Portland where there are near-term possibilities to establish new district energy systems that could grow and develop over time. PoSI and the Bureau of Planning and Sustainability identified four ways that a report could help support the development of these district energy systems:

1. Illuminate the regulatory landscape for district energy developers, and then recommend ways to make it more easily navigable and welcoming.
2. Learn about various development and operating models for district energy, to better understand which ones might work well for each of Portland's four key opportunity sites.
3. Recommend clear next steps for each of the four primary opportunity sites in Portland.
4. Prepare educational and outreach materials with which to clearly and effectively communicate Portland's district energy opportunities to potential franchisee/owner/developers and other stakeholders.

This paper provides an overview of the existing regulatory landscape for district energy developers and recommends various ways to make it more easily navigable and welcoming. Whereas many of these recommendations could, in theory, be acted upon immediately, PoSI believes — based on our understanding of how Vancouver, BC became a regional district energy pioneer — that these regulatory reforms will be most successful if they are made while an actual project is wending its way through the regulatory process.



Part 1: The Economic & Regulatory Environment

General Impediments to Development

All district energy franchisee/owners face the same basic challenges. Perhaps the biggest is the continuing lack of clear price signals for some of the obvious public benefits — or “positive externalities” — of district energy. These include lower greenhouse gas emissions, decreased price volatility, improved energy security, infrastructure flexibility for future fuel-switching, and potential increases in reliance on local resources, all of which can yield local economic development benefits. Sometimes there is enough of a private business case that a district energy project can proceed even without considering these public benefits — but not always.

Another common challenge stems from the difficulty of efficiently accessing information needed to perform project feasibility. Systems designed to serve multiple entities need to understand those entities’ current and projected energy use, and they also need to secure those entities’ commitment to sign up upon completion of the system. These challenges result in very high front-end “soft” costs and are significant barriers even to completing a feasibility study.

A third challenge is that district energy has certain characteristics of natural monopolies, in that a long term commitment of sufficient load is required to justify investors’ initial capital outlay. District energy equipment has limited salvage value once a system is constructed, so backers need reasonable assurance on long-term cash flow to justify the risk of investing.

Local Impediments to Development

In addition to the general barriers listed above, potential franchisee/owners and their project developers in Portland face some additional unique challenges. The city’s commission form of government gives bureaus and agencies a great deal of autonomy and they often operate independently. Considering the inter-bureau coordination required for the successful development of municipal district energy projects, this decentralization of authority presents a distinct challenge. Rather than working closely with a consolidated “engineering services” department, developers must quickly learn to navigate the complexities of the City of Portland’s bureau system.



Another challenge in Portland is a lack of recent large-scale district energy development experience in the local area. There are a number of district energy systems in greater Portland, however, most of these systems are either old and serve a single entity — usually a hospital or a university — and/or they are small and rely on conventional energy sources.¹ Large district energy systems serving multiple property owners have not been developed in Portland for decades, so the relevant city codes will probably require significant revisions and clarifications. Furthermore, nobody has developed district energy systems using renewable energy sources such as biogas, geothermal energy, biomass and other sources in the Portland metro area since the Pacific Power Lincoln Steam Plant was built in 1910², so the development of the first few modern systems using renewable fuels may spur significant modifications to the relevant codes, regulations, permits and laws — as well as neighborhood resistance. Unfortunately, potential regulatory barriers are difficult to identify proactively and early developers will almost certainly have to do some trail blazing.

Despite all of the general and Portland-specific challenges and impediments listed above, district energy is — largely due to increased understanding of the many public benefits — enjoying a worldwide renaissance. A number of new systems have been developed and upgraded over the past few years in Vancouver, BC, Seattle and Portland, and the City of Portland is eager to encourage this growing sector of the “green economy.”

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- 1 The Beaverton Round and Brewery Blocks systems both serve multiple entities, but they are relatively small, and they each initially served a single development project. No local systems rely on renewable energy sources.
 - 2 The Lincoln Steam Plant was powered by hog fuel (wood chips and mill waste) and was located at the site of the current Strand Condominiums. Source: <http://www.pacificpower.net/about/cf/centennial/pg.html>

Development Permitting

Bureau of Development Services³

Given the novelty of large, multi-property district energy projects using unconventional energy sources in Portland, the Bureau of Development Services (BDS) recommends that a developer begin the permitting process with a Pre-Application Conference (Pre-App) to introduce various City of Portland bureaus to the project and its developer. This process also provides the developer with an overview of the city's land use review and permitting processes. Pre-App Conferences occur approximately three weeks after submitting an application, which should include a preliminary plan showing where the developer intends to lay pipes and build structures.⁴ BDS also encourages district energy developers to pursue the assignment of a Process Manager who can help determine realistic timelines and keep the permitting process on track. Budget reductions have limited BDS' ability to assign Process Managers, but a high profile district energy project may still be able to garner this level of assistance.

Previous policy would have required a Site Development Permit for the installation of underground district energy piping, but recent policy revisions eliminate this requirement. Stand-alone energy plants and other above ground structures require a Commercial Building Permit and payment of two fees: a Building Permit fee and Development Services fee.⁵ These fees are based on contractor and engineering estimates, including construction and finishing work, equipment, materials, labor and overhead.⁶ Depending on the technology being employed, additional mechanical and/or plumbing permits will likely be required, but these fall outside the Commercial Building Permit process.

A Land Use Review is also required if a district energy project includes ground disturbance in an Environmental Zone or Greenway Zone.⁷ All of these are Type II Administrative Reviews and take eight to ten weeks.

3 Per communications with Jean Hester and George Helm of Bureau of Development Services, March 2011.

4 Pre-App Conferences currently cost \$3,491.

5 PoSI has not been able to confirm permitting requirements if energy plants are inside other structures. Calls to the Bureau of Development Services remain unanswered.

6 Building Permit fees for projects over \$100,000 are currently \$650.13 for the first \$100,000, plus \$3.44 for each additional \$1,000 in valuation. Development Services fees for commercial projects over \$100,000 are \$204.81 for the first \$100,000, plus \$1.13 for each additional \$1,000 in valuation.

7 An Environmental Review currently costs \$3,391 and a Greenway Review costs \$6,350. If located in a design overlay zone, any above ground structures or buildings will also require a Design Review, which currently costs between \$4,433 to \$28,093.

Zoning Code

Bureau of Planning and Sustainability

District energy developers will work closely with the Bureau of Planning and Sustainability and should be conversant in the following sections of the city's Zoning Code: Portland City Code 33.910 (Definitions), 33.920.400 (Descriptions of the Use Categories) and 33.100 (Base Zones). All of the currently-identified district energy opportunity areas are in commercial zones, whereas current code appears to accommodate large-scale energy generation only in industrial, manufacturing and certain employment zones. For this reason there appear to be two available paths to streamlining permitting for district energy:

1. The Conditional Use permitting process can be expedited for certain district energy projects, or
2. Zoning changes endorsed in the City's fifth Regulatory Improvement Code Amendment Package (RICAP 5) — which explicitly allows small-scale energy production facilities that produce energy for onsite consumption, district energy distribution or sale back to the electric grid — can be expanded to accommodate larger district energy systems.

The obvious permitting route for district energy development is the Conditional Use permitting process, which typically takes a year or more. This seems quite burdensome, but perhaps the City could fast-track Conditional Use Permit processing for district energy systems that meet certain (e.g. noise, traffic generation) restrictions and have strong neighborhood support.

The recent RICAP 5 modifications appear to have been made in part to make district energy development easier; however, RICAP 5's stipulations regarding maximum allowable fuel shipments and power generation capacity are both very low and they accommodate only very small-scale residential district energy systems. If these modifications were intended to spur larger-scale district energy development, they will probably need to be revisited and expanded.

For example, under the current code, in open space and residential zones, energy sources for small-scale facilities must either be located on-site or powered by natural gas. This accommodates solar and wind energy, but doesn't support any other alternative technologies or fuels. Meanwhile, in commercial-, employment- or industrial-zoned locations a maximum of 10 tons per week of biomass or other fuels may be brought in. To contextualize these limits, Compass Resource Management estimates that a district energy system running on biomass in the North Pearl District (including Conway and Post Office expansion areas) would likely require 40-80 tons of biomass per day during the peak winter heating season. Similarly, PoSI and Wisewood recently submitted a grant proposal to the US Forest Service to fund a biomass district energy feasibility study for appropriately-sized biomass CHP plants at South Waterfront and PSU. We estimated that these plants would initially require a combined total of approximately 19,300 bone dry tons of wood chips a year (about 53 bone dry tons a day), and that this total would grow with these systems' expansion over time.⁸ Clearly the current ten ton weekly limit will have to be increased if the City hopes to accommodate biomass district energy systems outside of industrial zones.

The current code also does not allow small-scale district energy systems to produce greater than 1MW of electric power (this code applies to all zones), and such systems are subject to rule 33.262 Off-site Impacts, which aims to minimize disturbance to others from noise, vibration, odor and/or glare nuisances in residentially- and commercially-zoned areas. Whereas actual nuisance restrictions probably shouldn't be softened, certain newer combined heat and power technologies are very clean and quiet, and increases to the allowable power generation threshold may be needed to enable CHP district energy system development on the scale envisioned by the City. The 1MW threshold was chosen to be consistent with the 20-customer limit for residential district energy systems per ORS 757.005, and at least some of the CHP district systems envisioned by the City would generate more than 1 MW of electricity.

Again, while RICAP 5 made steps toward accommodating very small scale distributed energy in residential and commercial areas, they didn't go far enough to accommodate district energy systems of the scale envisioned for Portland State University, South Waterfront, the North Pearl District or the Rose Quarter.

Note that utility-scale energy production is allowed in industrial and manufacturing zones and certain employment zones. In these zones, large-scale systems would neither need a conditional use permit nor would they be subject to the small-scale energy production code size limitations discussed above.

8 East Fork Consulting, Portland District Energy Project Biomass Feedstock Resource Assessment, page 3. February 2011.

Franchising & Right of Way: Cable and Franchise Management, Bureau of Transportation

This section highlights the key information relevant to the potential franchising of a district energy system and right-of-way (ROW) access in the City of Portland. It reflects several meetings and discussions with the City of Portland Office of Cable Communications and Franchise Management (Franchise Office) and the Bureau of Transportation (PBOT).

Proposed amendments to Title 17-Public Improvements will go before City Council in 2011 and will codify, and thereby clarify, several components of the franchise agreement process related to insurance, bonding, hazardous materials, damage to the ROW and the relocation of equipment. These amendments should expedite the current franchising process for all utilities. Considering it took PGE and Enron 18 months to complete the franchising process for the Brewery Blocks district cooling system, these amendments should accelerate the district energy franchising process.

Key Franchising Facts:

- A primary component of a franchise agreement is the grant of authority, which stipulates the franchise boundaries for the agreed upon use.
- The franchising process is the same for district heating, cooling and combined heat and power systems.
- The franchise fee for a district energy system (heating or cooling), regardless of public or private ownership, is 5% of gross revenues.
- There is no current plan to offer franchise fee discounts for sustainable energy generation technologies like district energy systems using renewable fuels or for projects that might help the City meet adopted carbon reduction goals. Such a policy would have to clearly delineate between qualifying and non-qualifying systems to avoid potential legal challenges.
- A franchise agreement does not release an applicant from complying with all existing city, state and federal laws, codes and administrative rules. Meeting all relevant legal requirements is a condition of franchise agreement approval.

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- A franchise agreement, as the process currently stands, will not grant exclusivity to a district energy provider, though practical limitations like space beneath the right of way and economic feasibility will likely prevent competition between multiple district energy system developers in a single neighborhood. The franchise agreement would not prevent competition from on-site systems. This competition would be undesirable in the early years until the system's initial capital outlay has been repaid. Incentives to building owners to connect and stay connected would help support the district energy system in its early years.
 - The Brewery Blocks' district cooling franchise agreement did not include any provisions for rate-setting, though rate restrictions potentially could be incorporated into future district energy franchise agreements. The current assumption is that rates will be limited by the marketplace, but the question of whether or not to regulate rates may warrant additional study once a specific district energy project has been proposed.

Right-of-Way Access

PBoT, Portland Water Bureau, Bureau of Environmental Services

Gaining access to the public right of way (ROW) for district energy is a two-step process. Upon approval of a franchise agreement, applicants must obtain a Street Opening Permit from PBoT's Street Systems Management department and its Traffic Control department. The Franchise Office sends a quarterly list of approved franchises to PBoT, and the Street Opening Permit is a formality in most instances, but approval is contingent on there being sufficient available space in the street, avoiding conflicts with future projects, and input from affected stakeholders. The permit application must include an infrastructure plan that details the type of pipe to be installed, pipe size, location etc. Permitting cost can be quite expensive, currently costing \$3.16 per square foot of excavated ROW (surface trenching). The application processing time required is usually between five and seven business days, and a permit is good for 180 days. Permit extensions are available, but the extensions require another application process.

A district energy developer must also work with the Portland Water Bureau (water supply infrastructure) and the Bureau of Environmental Services (sewer infrastructure) and potentially other bureaus to coordinate schedules and to accommodate other existing and planned infrastructure. Conversations with these bureaus and PBoT should be initiated early and in conjunction with the franchising agreement process, and having a coordinated Inter-Bureau District Energy Working Group would obviously be helpful.



Public Utility Commission

While the statutes discussed below are very broad, district energy facilities, particularly those operating mostly on renewable resources, are statutorily exempted from PUC regulatory oversight. Oregon Revised Statutes (ORS) Chapter 757 (Utility Regulation Generally) details the types of utilities that are subject to Public Utilities Commission (PUC) regulation, and per the definitions in ORS 757.005, the following entities do not fall under PUC authority:

- Any plant owned or operated by a municipality;
- Any entity providing heat, light or power:
 - From any energy resource to fewer than 20 residential customers, as long as the entity serves only residential customers; or
 - From solar or wind resources to any number of customers; or
 - From biogas, waste heat or geothermal resources for non-electric generation purposes to any number of customers; and
- Any entity furnishing heat, but not delivering electricity or natural gas to its customers.

The statute cited above exempts all district heating systems but it does not explicitly exempt district cooling; however, the Brewery Blocks district cooling system is not regulated by the PUC.⁹ District heating, cooling and at least some (smaller, renewable) combined heat and power systems will likely be exempt from PUC authority.

While Chapter 757 of the State of Oregon Regulatory Statutes deals with retail energy sales, a district energy provider that sells electricity on the wholesale market is subject to different rules. As long as a CHP plant sells power into the grid rather than directly to customers, it is also unlikely to be regulated. Per ORS 758.505, district energy facilities selling wholesale energy are treated as small-scale energy production facilities, which are not subject to PUC authority if they meet all of the following criteria:

- Produces energy primarily by the use of biomass, waste, solar energy, wind power, water power, geothermal energy or any combination thereof; and
- Is more than 50 percent owned by a person who is not an electric utility, an electric utility holding company, an affiliated interest or any combination thereof; and
- Has a power production capacity that, together with any other small power production facility located at the same site and owned by the same person, is not greater than 80 megawatts.

⁹ When asked, the Oregon Department of Justice would not offer further clarification because they are not authorized to offer legal advice to outside parties.

Based on PoSI's reading of the Oregon Regulatory Statutes, a district energy system running on renewable energy that is 51% owned by an entity other than an electric utility and does not sell retail energy will not explicitly be regulated by the PUC. But the situation is unclear, because regardless of whether a wholesale supplier of energy is subject to PUC authority, it still falls under regulation by the Federal Energy Regulatory Commission (FERC), and the FERC sometimes authorizes state utility commissions to set the rates at which wholesale energy is sold. This implies that the FERC may be able to preempt a local exemption.

Per ORS 757.007, even entities that are exempt from regulation by the PUC still must file with the PUC, not later than 30 days prior to their coming into effect, all contracts and schedules establishing rates, terms and conditions for the provision of heating services, and before the facility's exemption can be finalized, the PUC must find the contracts and schedules to be reasonable. If at any time the PUC finds that the activities of an exempt entity have an adverse effect upon the customers of public utilities and that the benefits of regulation outweigh any adverse effect on the public generally, the non-regulated entity's exemption can be over-ruled. This ever-present potential for intervention and re-regulation by the FERC and the PUC provides protection to energy consumers engaged in private contractual arrangements — even with entities that are not officially regulated by the PUC.

The FERC's and the PUC's legal authority to overrule a company's exemption from regulation can be applied to district energy systems supplying heating and cooling and apparently power generation. And regardless of any exemption from PUC rate regulation, CHP systems that include electricity distribution infrastructure will still be governed by PUC safety regulations for that distribution infrastructure. These safety regulations are found in Oregon Administrative Rule 860-024 and are consistent with the National Electric Safety Code.

Per the definitions listed above, net-metering regulations and rate control under Oregon Administrative Rule 860-039 do not apply to any entity not considered a public utility. However, any net-metering infrastructure of a district energy system will be subject to the above-referenced safety regulations.



Oregon Department of Environmental Quality (DEQ)

While it is difficult to predict the environmental impacts of a district energy system without specific project details including location, generation technology, fuel supply and system capacity, the following categories detail the most likely potential impact areas. According to the DEQ and based on a careful reading of the relevant statutes and administrative rules, there are few DEQ regulations specifically targeting district energy systems; however, these facilities fall under several broad regulatory frameworks. Until district energy development becomes more common and the needed regulatory oversight becomes clearer, district energy system development and permitting will apparently be handled on a case-by-case basis. Note that most of the permits outlined below require public processes including a public notice period and possibly a public hearing and/or meeting.

Site Cleanup

District energy developers should perform due diligence on needed environmental cleanup (Phase I Environmental Site Assessment at a minimum) before breaking ground on a district energy system, especially because thermal distribution systems are typically installed underground. Once proposed project areas are determined, DEQ's clean-up staff can provide direct information about known contamination issues. This is an especially important issue considering that franchise agreements, and potentially city code, assign the financial responsibility for environmental cleanup to the district energy developer. This legal requirement to clean up soils contaminated by others is likely to be a significant impediment for a district energy developer, and the DEQ and the City should explore the possibility of exempting district energy developers from incurring costs to clean up after others. Additional site cleanup information can be found here: <http://www.deq.state.or.us/lq/cu/index.htm>

Underground Storage Tanks

District energy systems often have a need for back-up fuel (typically for back-up diesel generators). Biomass and biogas systems may also require fuel storage. In addition, some systems include thermal storage systems (e.g. stratified hot water tanks) to balance out heating or cooling demand and production. Some of these storage systems could be constructed underground, depending on the type of storage and local site constraints. All of these tanks, if more than 10% underground, would require DEQ permits. <http://www.deq.state.or.us/lq/tanks/index.htm>.

Air Quality

While the technology will ultimately dictate the type of air quality permitting required, a district energy system will most likely require a Simple Air Contaminant Discharge Permit, also known as a Simple ACDP.¹⁰ A Simple ACDP is granted in five-year increments and governs emissions on uses like combustion-based electricity generation, sewage treatment facilities employing internal combustion for digester gasses, and boilers/fuel-burning equipment, among others. The Simple permit initially costs \$6,000 but has ongoing annual expenses related to the testing, monitoring, recordkeeping and reporting requirements for determining compliance with the Plant Site Emissions Limits (PSEL) and other required emissions benchmarks. More information on air quality permitting and standards can be found here: <http://www.deq.state.or.us/permit/acdp/acdp.htm>.

¹⁰ A Basic ACDP is sufficient for Natural Gas and Propane Fired Boilers of 10 or more MMBTU but less than 30 MMBTU/hr heat input constructed after June 9, 1989. Larger boilers require a General ACPP.



Solid Waste

If a district energy facility will accept solid waste (e.g. municipal solid waste) for combustion or for anaerobic digestion-based energy generation (e.g. biogas), it will also require a solid waste permit from the Oregon DEQ. Energy recovery facilities and incinerators receiving domestic solid waste must comply with OAR 340-096 Special Rules Pertaining to Incineration, which involves complying with air quality control regulations and permitting. The cost of the solid waste permit, per OAR 340-097, is \$10,000 if more than 7,500 tons/year of solid waste will be received, or \$5,000 if less than 7,500 tons/year. Other ongoing compliance fees may be determined on a case-by-case basis. Additional information on DEQ solid waste requirements can be found at <http://www.deq.state.or.us/lq/sw/index.htm>.

In addition to state permitting, a district energy facility that processes municipal solid waste into energy must apply for a franchise with the Portland Metro regional government. Metro's role in solid waste management includes enforcing state-level statutes and administrative rules, but Metro also focuses on quality of life impacts such as noise, odors, truck deliveries from waste collection and processing infrastructure. There is a \$500 application fee for a franchise, with a similar ongoing annual fee. The owner/operator of a facility must apply for the franchise, even if the facility is municipally owned, and for a franchise application to be processed all zoning code requirements and land use permitting must already be approved. From Metro's perspective, testing neighborhood resistance is often the first step in analyzing a franchise application. A public hearing is required before any franchise can be approved.

More information on Metro's solid waste management licensing program, including Columbia Biogas' recently approved franchise application for its anaerobic digestion facility, can be found here: <http://www.oregonmetro.gov/index.cfm/go/by.web/id=24807>.

It is unclear whether an urban biomass-fired district energy plant would be classified as a Solid Waste facility by the DEQ and would therefore need a Solid Waste Management permit. It appears to depend on whether or not the facility is classified as an "energy recovery facility" and whether the facility would receive waste that is "delivered by the public or by a solid waste collection service." These definitions may result in the exemption of a facility using pellets or wood chips delivered straight from a factory or from the woods. Several small biomass energy plants (i.e. boilers) were recently developed in Oregon, though not in major urban centers, and they were not classified as solid waste facilities by the DEQ. There is more about permitting bio-energy facilities in Oregon at <http://www.oregon.gov/ENERGY/RENEW/Biomass/bioenergypermitting.shtml>.

State Stormwater Management Permits (Bureau of Environmental Services and DEQ)

The Bureau of Environmental Services' Stormwater Management Plan guides both construction and post construction monitoring of stormwater runoff. Developers must use the best practices outlined in the Stormwater Management Manual (SMM), which was last updated in 2008 and can be found at: <http://www.portlandonline.com/bes/index.cfm?c=47952>.

The City of Portland Bureau of Environmental Services also enforces stormwater management regulations on behalf of the federal and state governments. The DEQ typically requires a 1200-C Construction Stormwater permit to plan for erosion and sediment control if more than one acre of soil is disturbed during construction. Given a district energy system's underground infrastructure, this is a near certain requirement, though it is also likely that district energy installation would occur within a larger, already-permitted construction project. The cost of this application and ongoing annual fees is currently less than \$800.

A 1200-Z Industrial Stormwater permit could be required depending on the district energy technology employed and the on-site storage facility. Though it is unlikely that anyone would propose a large facility with un-enclosed biomass fuel storage where wood debris might run off during rainstorms, such a facility would need a 1200-Z permit. More stormwater permitting details are available at: <http://www.deq.state.or.us/wq/wqpermit/stminfo.htm#1200c>.

Thermal Pollution of Cooling Water

Additional permitting may be required for cooling water and other water discharge, depending on the chosen district energy technology. More information on the uses requiring permitting can be found here: <http://www.deq.state.or.us/wq/wqpermit/genpermits.htm>.

Part 2: Addressing Regulatory Confusion & Barriers

The first part of this section describes the existing regulatory requirements and ambiguities facing district energy developers. The second part recommends a broad strategy for making Portland a district energy friendly municipality and identifies a range of proactive strategies and incentives being used by other cities to encourage district energy development.

Comprehensive Policy Framework

In order to move from the goals articulated in the Climate Action Plan toward actually having district energy in Portland, the City should commit itself to becoming the nation's most district energy friendly municipal government. To that end, it should take a number of concrete steps to attract and promote district energy system developers. Some remove barriers; others provide incentives; a few are mandates.

Our recommendations for each category are prioritized.



Remove Barriers:

1. Decide on and empower a single entity to play the role of district energy Facilitator/Convener — i.e. “district energy champion” — in Portland. To date this role has been shared by the Portland Development Commission, the Bureau of Planning and Sustainability and PoSI. All of these entities can continue to play a role, but there should be a single entity “on point.” We recommend that PoSI play this role.
2. Establish an Inter-Bureau District Energy Working Group tasked with the explicit goal of making Portland the nation’s most proactively “district energy-friendly” City by the end of 2011. This Working Group would include representatives from the relevant regulatory bodies and ideally it would be supported by a Technical Advisory Committee (TAC) comprised of local and regional experts with experience developing the region’s district energy systems including the Brewery Blocks, OHSU, PSU, PCC Sylvania and the Beaverton Central Plant. This group would comb through the entire regulatory framework — a good portion of which is discussed in Part 1 of this paper — and look for ways to streamline it.
3. Convene a Key Stakeholder Group for each of the four opportunity sites. These groups would be convened by the Facilitator/Convener and comprised of major stakeholders from each location as well as the Inter-Bureau District Energy Working Group. These groups would drive forward the projects at the four opportunity sites.
4. Create clear permitting guidelines — such as a streamlined Conditional Use Permitting process — to support expedited site selection for district energy centers.
5. Facilitate district energy developers’ access to renewable fuels within the community. For example, district energy developers could be offered preferential access to locally generated wet organic waste or woody construction debris to guarantee sufficient feedstock for an anaerobic digester or a woody biomass boiler.
6. Explore the legality of exempting district energy developers from cleanup costs stemming from excavation of others’ past environmental contamination. Most district energy systems require extensive site work, and the fact that franchise agreements, City Code and the DEQ all appear to assign the financial responsibility for pre-existing environmental cleanup to the district energy developer could be a significant barrier to potential developers.

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7. Develop a comprehensive district energy assessment map of the Central City that details underground linear infrastructure, scheduled capital improvement projects within the Right of Way (e.g. road improvements, sewer and stormwater infrastructure projects), building types, building energy use intensity, and building equipment and distribution systems, including age of equipment. This would promote and support coordinated planning and installation of infrastructure installation and repairs. To minimize overall cost and disruption, road reconstruction and resurfacing should be more easily coordinated with the installation of sewer pipes and bioswales, fiber optic cable, streetcar and light rail alignments and district energy distribution pipes.
 8. Participate in LEED working groups to help fix the remaining conflicts between the LEED rating system and district energy. If this doesn't happen quickly, the City could award a certain number of "LEED equivalency" points for connection to a district energy system. Even if these points didn't count toward national LEED certification, they could be counted toward local green building requirements.



Provide Incentives:

1. Either identify or create — or work with State or Federal authorities to do so — a low-cost source of financing of district energy. Some possible sources include Tax Increment Financing from PDC to subsidize district energy infrastructure; establishing a low-interest revolving loan fund; developing a Carbon Bond mechanism similar to that being solicited by the City of Chicago¹¹; and various mechanisms discussed in the Federation of Canadian Municipalities' 2004 study, *Green Infrastructure: Demonstrating the Economic Benefits of Integrated, Green Infrastructure*¹², which examined the financing mechanisms and cost-effectiveness of various integrated green infrastructure projects. These and many other financing mechanisms could potentially finance a district energy system, but a comprehensive exploration of district energy financing mechanisms is outside the scope of this paper.
2. Commit to connecting all municipal buildings to district energy systems as soon as it is cost-effective to do so. In other words, any municipal building with “district energy ready” radiant heating and cooling systems would connect to a distribution system as soon as a distribution line were accessible in the adjacent right of way.
3. Disclose the expected replacement date of municipal buildings' mechanical systems. This would let district energy developers know when an additional load may be ready to connect to a district system. The City, the County, the Port and all federal government buildings could presumably publish the anticipated replacement dates for its own buildings' HVAC systems, as well as those buildings' compatibility with district energy.¹³ Private building owners could also either be required or offered incentives to disclose this information.
4. Award density bonuses to property developers that exceed minimum green performance requirements and make connection to district energy one of the ways to achieve this. The City of Burnaby, British Columbia, legally requires developers through its zoning code to meet minimum levels of energy efficiency, and those that exceed these minimums or utilize alternative energy systems are eligible for 5-10% Floor Area Ratio (FAR) density bonuses. This simultaneously encourages urban density and reduces a district energy developer's risk by increasing the square footage being served by a new system.
5. Offer partial (temporary or ongoing) property tax relief to property owners that connect their buildings to district energy.
6. Establish core district energy areas with very strong connection incentives, along with streamlined policies for system extensions beyond the core area.

11 Source: City of Chicago, Request for Proposals, Developing New Financing Mechanisms to Support Energy Efficiency, Renewable Energy and Other Climate Change Initiatives

12 For details see: fmv.fcm.ca/files/Capacity_Building-Planning/final-reporteconbenefits.pdf

13 The City of Portland already publishes a wide range of data at www.civicapps.org

Impose Mandates:

1. Require district energy feasibility studies for large buildings and master plans. For example, the City of Vancouver, B.C. requires such studies for master plans greater than two acres. Similar requirements could potentially be incorporated into the Portland Development Commission's Disposition and Development Agreement process. The Bureau of Planning and Sustainability should also explore the possibility of adding feasibility study requirements to local zoning regulations.
2. Levy a municipal carbon tax on energy purchases. This would have a similar effect as reducing franchise fees for district energy, but it would encourage all kinds of emissions reductions rather than explicitly favoring district energy over other measures. The resulting revenue stream could be used to capitalize the previously-referenced low-interest investment fund. Boulder, Colorado, Quebec, and British Columbia, as well as Sweden, Finland, Great Britain and New Zealand have all levied carbon taxes. In most of these countries, the revenues are used either to reduce payroll taxes or to fund green energy or sustainable infrastructure investments.¹⁴ A full discussion of carbon taxes as a funding mechanism for district energy is beyond the scope of this paper.
3. Require connection to available district energy systems. The City of Richmond, B.C.'s Bylaw 8641 requires connection to its Alexandra District Energy Utility within the project area and also includes rate information that is broken into capacity and usage components. The Vancouver, B.C. City Council also requires mandatory participation within the core of the Southeast Falls Creek project area, and has guidelines for voluntary connection outside the core area. These examples are both from Canada, and we were unable to find any cities in the U.S. with mandatory connection requirements. According to the Portland City Attorney's Office, mandatory connection would require legislative mandates by the Portland City Council and perhaps the state legislature as well.

¹⁴ For a country-by-country review of carbon taxation, please see <http://www.carbontax.org/progress/where-carbon-is-taxed/>

Summary

District energy can offer strong overall economic returns to private investors as well as clear community benefits, but a range of regulatory and institutional barriers still hinder these systems' widespread adoption. This is especially true of systems intended to serve a mix of institutions, public buildings and private properties. Public support for district energy can take a wide range of forms, from regulatory streamlining and incentives to offering direct financial support and mandating connection. It is important for the City to fully embrace district energy, and to actively facilitate district energy development.

The City should view district energy not only as a relatively sustainable system of power-generation and distribution infrastructure, but also as a competitive advantage for the municipality, its residents and its businesses. Furthermore, it should view district energy as a potential new facet of Portland's burgeoning clean technology employment cluster.

To aggressively move district energy system implementation forward, the City of Portland should consider the full range of recommendations outlined in the above section. In many respects, public support for district energy is similar to public support for mass transportation systems like the light rail or streetcar: they disrupt the status quo and sometimes threaten a few narrow private interests, but they result in a more prosperous, more sustainable community — and a better overall business environment for everyone.



Acknowledgements

District Energy for Portland: Laying the Groundwork for Implementation was researched and written by the Portland Sustainability Institute (PoSI), in partnership with Compass Resource Management and Cogan Owens Cogan LLC, and under contract with the City of Portland Bureau of Planning and Sustainability. Many people contributed to this report, and PoSI would especially like to thank the following individuals and organizations for their generous contributions:

Lisa Abuaf, Portland Development Commission
Stephanie Andrus, Oregon Department of Justice
Kipp Baratoff, Gerding Edlen Sustainable Solutions
Joe Barra, Portland General Electric
Alex Bejarano, City of Portland Bureau of Transportation
Benjamin Benninghoff, Oregon Department of Environmental Quality
Irene Bowers, Portland Development Commission
Jeff Cole, Konstrukt
Bill Edmonds, NW Natural
Matt Emlen, Johnson Controls
Maury Galbraith, Public Utility Commission of Oregon
Stan Gent, Seattle Steam
JR Gonzalez, Public Utility Commission of Oregon
Mark Gregory, Portland State University
Tom Fitzsimmons, Lorig Associates, LLC
Andrew Haden, Wisewood, Inc.
George Helm, City of Portland Bureau of Development Services
Mary Beth Henry, City of Portland Office of Cable Communications and Franchise Management
Jean Hester, City of Portland Bureau of Development Services
Alisa Kane, City of Portland Bureau of Planning and Sustainability
Randall Ingram, Johnson Controls
David Jordan, Veolia Energy
John Lerch, General Electric
Jennifer Li, City of Portland Office of Cable and Franchise Management
George Marandas, Hadley Stevens Marandas
Vinh Mason, City of Portland Bureau of Planning and Sustainability

Bill Metzler, Metro
Noel Mingo, Portland State University
Ken Morrison, Corix Utilities
Geraldene Moyle, Portland Development Commission
Scott Nelson, Office of Governor Kitzhaber
Brian Newman, Oregon Health and Science University
Keith Oldewurtel, Veolia Energy North America
Leo O'Loughlin, Veolia Energy
Tom Osdoba, UO Center for Sustainable Business Practices
Art Pearce, City of Portland Bureau of Transportation
Rick Saito, Group Mackenzie Architecture
Alex Schay, Carbon Solutions Northwest
Scott Schumaker, OTAK
Kia Selley, Portland Development Commission
Janet Senior, Portland Water Bureau
David Soloos, City of Portland Office of Cable and Franchise Management
Susan Steward, BOMA Portland
Arianne Sperry, City of Portland Bureau of Planning and Sustainability
Christine Svetkovich, Oregon Department of Environmental Quality
Rob Thornton, International District Energy Association
John Tydlaska, Portland Development Commission
Sarah Vonde Velde, Oregon Health and Science University
Ben Walters, City of Portland Office of City Attorney
Dennis Wilde, Gerding Edlen Development
Jody Yates, City of Portland Bureau of Transportation
Justin Zeulner, AEG - Rose Quarter

In preparing this report, the Portland Sustainability Institute relied heavily on the individuals listed above. We alone are responsible for any errors and omissions. We welcome your suggestions, updates and corrections. Please send them to districtenergy@pdxinstitute.org.

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Streamlining Portland's District Energy Regulations

Final Report

March 31, 2011

Prepared For:



Bureau of Planning and Sustainability
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