Energy Trust of Oregon

Biofuel Efficiency Project Measure Recommendation

Conservation Advisory Council
March 19, 2008

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Question

- Should Energy Trust efficiency programs fund projects that use renewable biofuels to supplant the thermal load supplied by natural gas or electricity?
- **Biofuel** can be broadly defined as solid, liquid, or gas fuel consisting of, or derived from biomass (living and recently dead biological material that can be used as fuel or for space heat, water heat, and industrial production)

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Context

- OPUC definition for conservation:
  - Conservation means any reduction in electric power or natural gas as a result of efficiency of energy use, production, or distribution and includes cost-effective fuel conversion
- Solar thermal precedent
  - Programs currently provide efficiency funding for solar thermal projects that reduce electric and natural gas consumption
- Why not extend this policy to other renewable sources of energy that can reduce natural gas and electric consumption?

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Background

- Meeting discussions in Nov. Jan. and Feb.
- Main issues
  - Fuel neutrality: no converting systems to a competing utility's energy source
  - Biofuel projects should not contribute to utility peak
  - Emissions concerns
  - Social, economic and ecosystem impacts
  - Public purpose funding contribution

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Where We Were

- BioPower CHP should be explored before thermal-only consideration.
- Project sites should be required to contribute to public purpose funding <u>after</u> project is completed
- For projects that will continue to use fossil fuel as backup or percentage of fuel mix, ET should have assurance that the incentive investment is realized through a verification incentive provision in contract.
  - ET should require proof of biofuel supply though incentive payback term
- Requires all emission regulatory permits in place (DEQ) per BioPower program requirements

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What We Heard

General support from most council members with caveats:

- Limit incentive offerings to commercial and industrial sectors
- Concerns about promoting the use of renewable fuel sources that would be diverted from food crops
- The proposed multitude of provisions will dissuade participation
- Concerns about draining limited efficiency dollars for fuel conversion projects that are not necessarily energy efficient
- Limited incentive offering based on incremental equipment upgrade will result in anemic incentive opposed to project cost
- Consider offering as a pilot with a limited number of projects to define future standard offer and project eligibility conditions

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Project Analysis

- Scenario #1 Retrofit existing Gas Boiler with Biomass Boiler
  - annual savings of 75,825 therms.
  - incentive of $1/therm = $75,825.
- The Utility B/C ratio is 12.0, and the Societal B/C ratio is 1.01

Measure Lifetime (Maximum 70 yrs)	Annual Electricity Savings (kWh)	Annual Natural Gas Savings (therms)	Total Incremental Cost of Measure	Annual Non-Energy Benefits $ (if any)	Total Potential Incentive If Measure is Cost-effective	NPV of Non Energy Benefits	Utility System PV of Benefits	Societal PV of Benefits	Combined Utility System BCR	Combined Societal BCR
30	0	75,825	$900,000		$75,825		$911,177	$911,177	12.0	1.012

- Scenario #2 New or End of Life of Existing Gas Boiler replaced with Biomass Boiler
  - annual savings of 75,825 therms.
  - incentive of $0.8/therm = $60,660.
- The Utility B/C ratio is 15.0, and the Societal B/C ratio is 2.0

Measure Lifetime (Maximum 70 yrs)	Annual Electricity Savings (kWh)	Annual Natural Gas Savings (therms)	Total Incremental Cost of Measure	Annual Non-Energy Benefits $ (if any)	Total Potential Incentive If Measure is Cost-effective	NPV of Non Energy Benefits	Utility System PV of Benefits	Societal PV of Benefits	Combined Utility System BCR	Combined Societal BCR
30		75,825	$450,000		$60,660		$911,177	$911,177	15.0	2.0

Where We Are - Staff Conclusions

- Consistent with solar thermal, thermal biofuel projects are high value conservation measures worthy of support
- BioPower CHP should be explored before thermal-only consideration
- Project sites should be required to contribute to public purpose funding after project is completed
- Limit projects to commercial and industrial applications
- Participant must agree to initiating site-wide efficiency program as a condition to undertaking biofuel project
  - Perform analysis of biomass based on loads remaining after any efficiency measures with lower cost/unit savings.

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Staff Conclusions (cont.)

- Allow only renewable waste fuel source projects
- Offer standard program incentives based on deferred energy load
- ET should have assurance that the incentive investment is realized for projects with fossil fuel as backup
  - ET should require proof of biofuel supply though incentive payback term, or
  - Provisions for partial recovery of incentives if the plant reverts to fossil fuel.
- Requires all emission regulatory permits (DEQ) per BioPower program requirements

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Process for Project Consideration

Participant wants to replace electric or gas fueled system with biofuel alternative

- Fuel type - Oil, propane, or other fossil fuel: we bow out
- Electric or natural gas:
  - Perform technical and economic feasibility assessment of existing system and high performance biofuel system
    - Establish current equipment fuel consumption
    - Determine project cost (Incremental cost for new and end-of-life systems)
    - Perform cost-effectiveness screening using project cost and avoided fossil fuel costs as savings
  - Offer the standard PE-EB-NB program incentive calculated from the avoided fossil fuel costs, providing it passes societal cost effectiveness
  - Claim all of the off-set electric and or gas usage regardless of B/C outcome providing that ET influence resulted in project implementation

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Staff Recommendation

Applicable to Business Energy Solutions programs

- Incorporate conclusions and process for project consideration as defined above into programs
- Operate on pilot basis by reactively accepting up to 10 projects in 2008 and 2009
  - No active marketing and outreach
- Perform evaluation for measure efficacy
- Report back to CAC results before expanding measure in programs

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