

**Residential, Commercial, and Industrial (RCI)
Technical Working Group**

| Option No. | GHG Reduction Policy Option Name | GHG Reductions (MMtCO ₂ e) | | | Net Present Value (Million \$) | Cost-Effectiveness (\$/tCO ₂ e) | Level of Support |
|------------|---|---------------------------------------|------|-------------------|--------------------------------|--|------------------|
| | | 2015 | 2025 | Total (2008–2025) | | | |
| RCI-7 | Conservation Improvement-type Program for Propane and fuel oil efficiency | 0.05 | 0.05 | 0.7 | -\$21 | -\$28 | Pending |

RCI-7. Conservation Improvement-Type Program for Propane and Fuel Oil Efficiency

Policy Description

Implement cost-effective programs to reduce propane and fuel-oil use; target rebates to overcome market barriers; maximize convenience to program participants; capture overall system efficiencies, not just equipment efficiencies; joint efforts to achieve market transformation; ongoing research, evaluation and analysis; complement government, utility and non-utility efficiency programs; and seek to remove any disincentives or regulatory barriers to energy efficiency.

Policy Design

Goals:

- Establish minimum efficiency heating plant standards consistent with the United States Department of Energy's Energy Star program. Current Energy Star efficiency standards are 80% for fuel oil, and 85% for propane (including water heating). Recommend rebates for high efficiency models starting at 85% for fuel oil, and 90% for propane.
- Establish and implement plan for inspection and tune up of all existing in-use heating systems and establish inspection cycle. This plan should include inspection of fuel storage and delivery systems. Inspections are to be conducted and certified by certified and trained personnel.
- Remove fuel rate disincentives and/or penalties for reduced energy consumption as a result of installing high efficiency heating equipment.
- Train and certify fuel hauler drivers in efficiency standards to recognize and tag storage and furnace systems for non-compliance.
- Provide low interest loans for low income households to encourage installation of higher efficiency models.
- Encourage manufactures to take advantage of new technological developments such as alarm systems for leaks, monoxide, etc. and for component failure (i.e. filter plug, restricted heat exchanger).
- Provide public recognition to those individuals or companies that are successful leaders in promoting efficiency standards.

Timing: 2009. All goals must be initiated and progress evaluated.

Parties Involved: All Parties with interest.

Other: Not applicable

Implementation Mechanisms

Create an ongoing state task force of consumers, state agencies, utilities; and business representatives' to annually review Conservation Improvement Program initiatives and make changes according to program effectiveness, technological changes, and critical fuel changes.

Related Policies/Programs in Place

Xcel's CIP Program.

Type(s) of GHG Reductions

Reductions from avoided propane and fuel oil combustion.

Estimated GHG Reductions and Net Costs or Cost Savings

Data Sources:

- MN GHG forecast developed for this process (based on the worksheet called "Energy Use and CO2" in a spreadsheet called GHGemitsum07_Working.xls)
- Annual Estimates of Housing Units for the United States and States: April 1, 2000 to July 1, 2005 (available at U.S Census Bureau annual data, released end of every July: <http://www.census.gov/popest/housing/HU-EST2005.html>)
- New Privately Owned Housing Units, Authorized Unadjusted Units for Regions, Divisions, and States, U.S Census Bureau annual data, released end of every July, available at <http://www.census.gov/const/C40/Table2/t2yu200512.txt>
- Ratios of new residential/commercial floor space to total floor space, from EIA, available at <http://www.eia.doe.gov/emeu/cbecs/excel/b1.xls>
- Regional fuel prices for fuel oil and propane from the EIA AEO2007 estimates for the West North Central region (available at <http://www.eia.doe.gov/oiaf/aeo/supplement/>)
- MN natural gas prices from the EIA (available at http://tonto.eia.doe.gov/dnav/ng/ng_pri_sum_dcu_SMN_a.htm)

Quantification Methods: See Annex 1

Key Assumptions: See Annex 2

Key Uncertainties

Ramp up period for achieving efficiency improvement; projected fuel oil and propane fuel costs

Additional Benefits and Costs

Reduced local air pollution

Feasibility Issues

TBD

Status of Group Approval

Pending approval

Level of Group Support

Pending approval

Barriers to Consensus

Quantification of total costs

Annex 2. Key Assumptions

RCI-1: Conservation Improvement-type Program for Propane and fuel oil efficiency

Assumed start year for the option

2009

Equipment efficiency improvement target for fuel oil

1

- 1 Efficiency of equipment using fuel oil improves from 80% to 85% (default)
- 2 User-defined (Efficiency of equipment using fuel oil improves from 80% to 85%)

Ramp-up period for achieving the efficiency improvement target for fuel oil in MN (years)

1

- 1 Policy ramps up linearly over a 5 year period (default)
- 2 User-defined (Policy ramps up linearly over a 10 year period)

Phase-in for efficient fuel oil equipment

| Start year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2008 | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2009 | | | | | 17% | 34% | 51% | 68% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% |
| 2010 | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2011 | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2012 | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2013 | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2014 | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2015 | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2016 | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2017 | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2018 | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2019 | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2020 | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% |
| 2021 | | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% |
| 2022 | | | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% |
| 2023 | | | | | | | | | | | | | | | | | | | 0% | 0% | 0% |
| 2024 | | | | | | | | | | | | | | | | | | | | 0% | 0% |
| 2025 | | | | | | | | | | | | | | | | | | | | | 0% |
| efficiency | 0% | 0% | 0% | 0% | 17% | 34% | 51% | 68% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% | 85% |
| Share | 0% | 0% | 0% | 0% | 20% | 40% | 60% | 80% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Equipment efficiency improvement target for propane

1

- 1 Efficiency of equipment using propane improves from to (default)
- 2 User-defined (Efficiency of equipment using propane improves from to

Ramp-up period for achieving the efficiency improvement target for propane in MN (years)

1

- 1 Policy ramps up linearly over a year period (default)
- 2 User-defined (Policy ramps up linearly over a year period)

Phase-in for efficient propane equipment

| Start year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2008 | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2009 | | | | | 18% | 36% | 54% | 72% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% |
| 2010 | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2011 | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2012 | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2013 | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2014 | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2015 | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2016 | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2017 | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2018 | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2019 | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% | 0% |
| 2020 | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% |
| 2021 | | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% | 0% |
| 2022 | | | | | | | | | | | | | | | | | | 0% | 0% | 0% | 0% |
| 2023 | | | | | | | | | | | | | | | | | | | 0% | 0% | 0% |
| 2024 | | | | | | | | | | | | | | | | | | | | 0% | 0% |
| 2025 | | | | | | | | | | | | | | | | | | | | | 0% |
| efficiency | 0% | 0% | 0% | 0% | 18% | 36% | 54% | 72% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% | 90% |
| Share | 0% | 0% | 0% | 0% | 20% | 40% | 60% | 80% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

Percentage of new fuel oil use subject to the new efficiency standards

| | | |
|---|--------------|------|
| 1 | | |
| 1 | Use | 100% |
| 2 | User-defined | |

50% since not user-defined, ignore value in cell at left

Percentage of new propane use subject to the new efficiency standards

| | | |
|---|--------------|------|
| 1 | | |
| 1 | Use | 100% |
| 2 | User-defined | |

since not user-defined, ignore value in cell at left

Percentage of existing fuel oil use subject to the new efficiency standards

| | | |
|---|--------------|-----|
| 1 | | |
| 1 | Use | 50% |
| 2 | User-defined | |

25% since not user-defined, ignore value in cell at left

Percentage of existing propane use subject to the new efficiency standards

| | | |
|---|--------------|-----|
| 1 | | |
| 1 | Use | 50% |
| 2 | User-defined | |

50% since not user-defined, ignore value in cell at left

CO2e emission factors (tCO2e per mmbtu)

| | |
|------|-----------------|
| 0.07 | diesel fuel oil |
| 0.06 | propane |

Payback period for efficient equipment (years)

| | | | | |
|---|--------------|-----|---------|--|
| 1 | | | | |
| | | oil | propane | |
| 1 | Use | 14 | 6 | |
| 2 | User-defined | | | |

14 7 since not user-defined, ignore values in cells at left

Lifespan for efficient equipment (years)

| | | | | |
|---|--------------|-----|---------|--|
| 1 | | | | |
| | | oil | propane | |
| 1 | Use | 30 | 8 | |
| 2 | User-defined | | | |

30 25 since not user-defined, ignore values in cells at left

Real discount rate

| | | |
|---|--------------|----|
| 1 | | |
| 1 | Use | 5% |
| 2 | User-defined | |

4% since not user-defined, ignore value in cell at left

