Achieving Additional Savings in the Clothes Washer Market

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Project Background

- Develop a clothes washer replacement program in the Great Lakes states to increase energy and water savings
- Laundry is responsible for significant energy and water usage in households; commercial facilities also large consumer
- New clothes washers are dramatically more efficient than older washers
  - 50 percent less water
  - Up to 75 percent less energy
  - $250 million in energy bill savings annually w/ ENERGY STAR

Project Background

- Part 1 – Research
  - Assessment of energy and water savings opportunities in the residential (single family and multi-family) and commercial markets
    - Characteristics of current market
    - State regulatory structures
    - Energy and water cost trends
    - Existing and innovative incentive programs
  - White paper released in July 2013
    - http://aceee.org/white-paper/great-lakes-clothes-washers

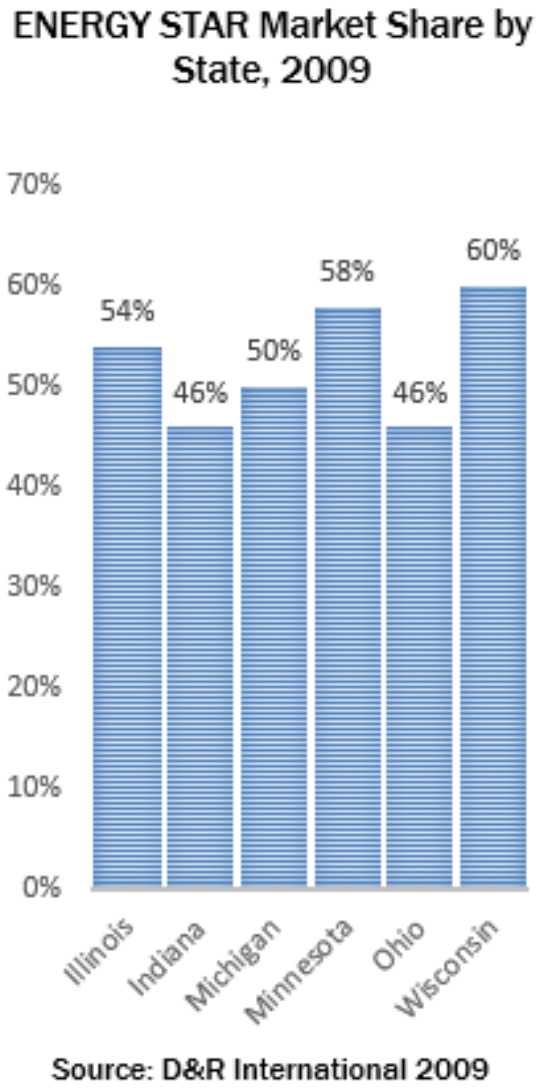
Project Background

- Part 2 – Develop and Implement Pilot Program
  - Program designs in residential and commercial markets
  - Outreach to potential sponsors and partners
  - Aim to integrate electric, gas, water, and wastewater utility efforts

Findings from our research

Characterization of existing clothes washer markets

- **Residential:**
  - Two primary equipment types (top-loading and front-loading)
  - 93.2 million residential clothes washers in the U.S. market, with annual sales of about 8 million
  - ENERGY STAR market share of 64% nationwide, but lower in Great Lakes states



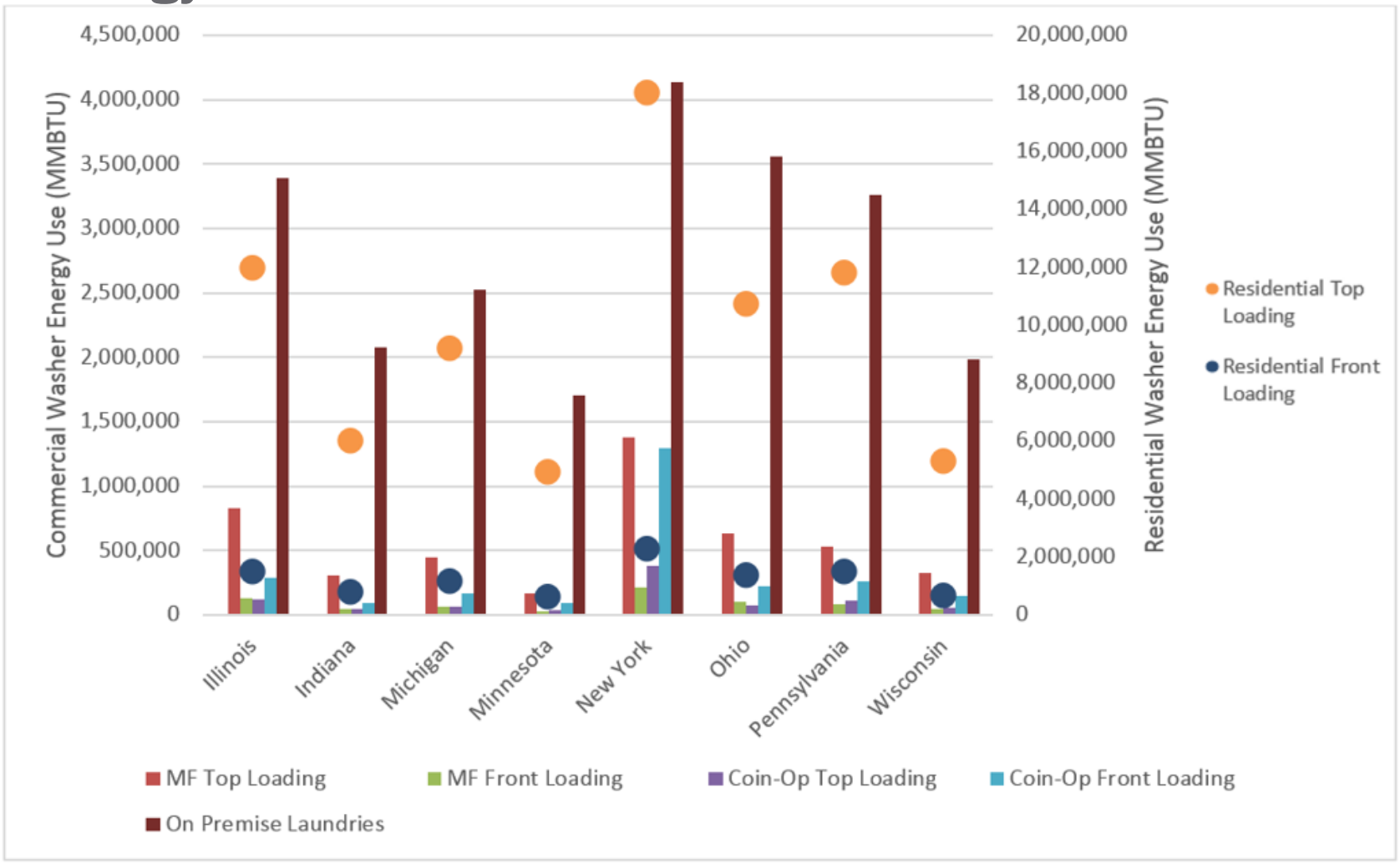
Findings from our research

Characterization of existing clothes washer markets

- Commercial:
  - Four primary markets: coin-op, multifamily, on-premise laundries, industrial laundries
  - More varied equipment types: “family-size” commercial, multi-load (15-100 lb capacity size range), tunnel washers
  - Only one equipment type has ENERGY STAR rating: “family-size” commercial
  - ENERGY STAR market share much lower than in the residential sector: 32%

Findings from our research

Energy Use



Proposed program designs

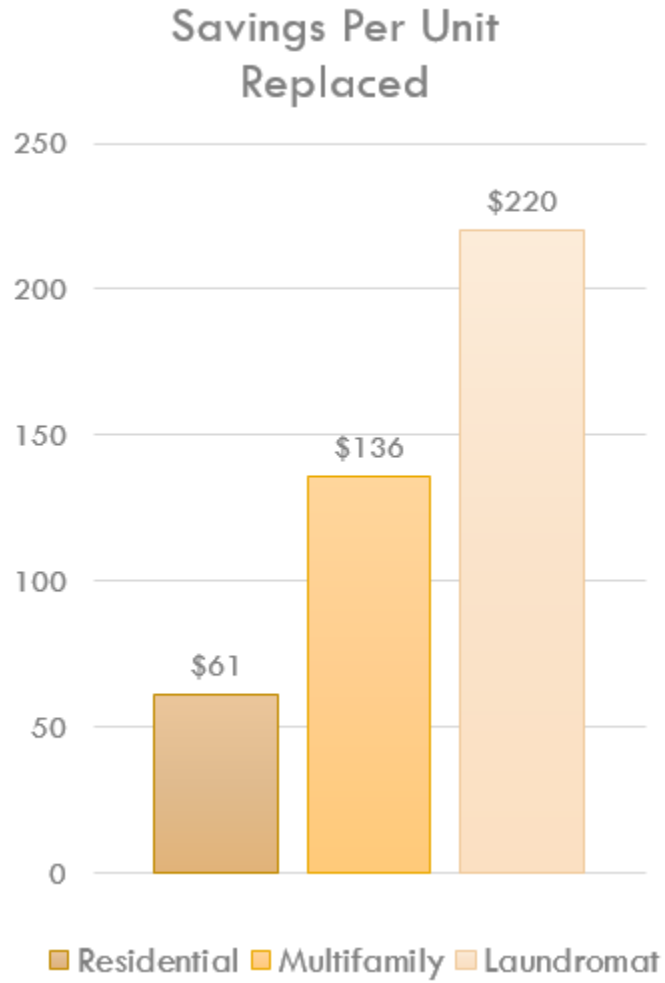
- **Residential Sector – incentivize the highest efficiency machines**

Machine Type	Energy Use (kWh/yr)	Energy Cost	Water Use (gallons/yr)	Water Cost	Total Operating Cost
Conventional Unit (1.26 MEF, 9.5 WF)	768	$89.09	9188	$29.86	$118.95
ENERGY STAR Unit (2.0 MEF, 6.0 WF)	484	$56.14	5803	$18.85	$74.99
Top Ten Unit (3.3 MEF, 3.0 WF)	293	$33.98	2902	$9.51	$43.49

Assumptions: 312 cycles/year, 11 year machine lifespan, hot water fuel type and dryer fuel type- electric, 3.1 cubic feet capacity, 6 loads/week, Illinois residential utility rates ($0.116 per kWh, $1.62 per therm, $3.25 per thousand gallons) (EPA and DOE 2013; Black & Veatch 2010).

Proposed program designs

- **Commercial Sector**
  - Multifamily building owners
  - Laundromat owners
  - Scale rebates according to the amount of energy and water saved – larger rebates for commercial customers
  - Opportunity to incentivize incremental temperature pricing for allowing customers the option of washing in cold water
    - Estimated savings of 25-30% from past projects in a multifamily setting, just by giving customers the option to choose cold water



Proposed program designs

- **Commercial Sector – Multifamily**
  - **Multifamily laundry rooms are composed predominantly of "family-size" commercial washers (ENERGY STAR rated)**
    - **Consider delivery channels –multifamily housing facilities often lease laundry equipment from a third party route operator instead of purchasing from a distributor**
    - **Significant savings opportunities for upgrade to ENERGY STAR; additional savings opportunities from incremental temp. pricing**

	Electricity Use (kWh/yr)	Natural Gas Use (Therms/yr)	Water Use (gallons/yr)	Cost Savings
Savings per Unit Replaced	229	17	13,977	
Savings per Facility				
Small Facility (5 units)	1,145	85	69,885	$435
Med. Facility (10 units)	2,290	170	139,770	$870
Large Facility (25 units)	5,725	425	349,425	$2,174

Proposed program designs

- Commercial Sector – Laundromats
  - Laundromats are often host to a variety of machine types
  - Three strategies:
    - Replacement of inefficient family-size commercial clothes washers with (a) ENERGY STAR units, and (b) multi-load machines
    - Replacement of aging multi-load hard-mount washers with new soft-mount units
    - Incremental pricing for different wash temperature settings on machines

Proposed program designs

- **Commercial Sector – Laundromat**

Before	After	Annual Savings
10 top loaders	5 ENERGY STAR "family-size" front loaders, 2- 40lb multi-load machines	Natural Gas:1,264 therms Electricity: 1,378 kWh *Water*: 156,800 gallons
20 front loading hard-mount machines of varying sizes: 8- 18lb units 4- 25lb units 3- 30lb units 3- 40lb units 2- 50lb units	Replacement of existing hard mount machines with soft mount machines of the same size.	Natural Gas: 13,597 therms Electricity: 2,742 kWh Water: 787,000 gallons (natural gas savings from dryer energy included)
No incremental temperature pricing	Program all machines in the facility to charge customers different prices based on water temperature chosen	25-30% total savings possible

Energy & Water Utility Collaboration

- Benefits from CW programs accrue to energy and water utilities
  - Opportunity to maximize savings w/ joint incentive program
  - Examples from outside the Great Lakes region
    - San Francisco Bay Area – PG&E and local water agencies (up to $125)
    - Austin, TX – water, gas, electric utilities (up to $250) for multi-family/commercial properties

Questions?

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