# Integrating MT with Codes, Standards and Tax Credits

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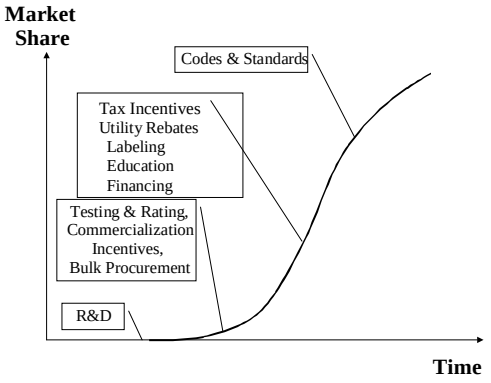
# The Market Development Curve



## Role of Building Codes in MT

- Codes apply primarily to new construction
- Codes can complete the MT process, once new construction practices are accepted in the market
- MT initiatives can lay the groundwork for future code upgrades

## MT and Code Examples

- NWPPC/BPA model conservation standards
  - Introduced to region thru training, Super Good Cents, and early adopter program for municipalities
  - Led to statewide codes in WA and OR
  - Program cost $100 million but program+code savings cost average of $.003/kWh
- Ontario Hydro and PG&E -- programs laid groundwork for commercial code upgrades

## Recommended Process for New Construction Improvements

- Develop new construction guidelines that exceed current codes, but in similar format as current codes
- Use these guidelines as a foundation for training efforts and voluntary incentive programs
- Adopt as a mandatory code once practices are familiar and accepted

## New Construction Process (continued)

- Repeat the process as long as significant cost-effective efficiency opportunities remain
- Such a process can drive change more quickly than the current ad hoc process
- Advanced techniques can continue to be promoted thru voluntary programs, even if they are not "code ready"

## Current Federal Appliance and Equipment Efficiency Standards

- Refrigerators & freezers
- Clothes washers & dryers
- Dishwashers
- Water heaters
- Furnaces & boilers
- Central a/c and HP
- Showerheads, faucets and toilets
- Fluorescent ballasts & tubes
- Incandescent reflector lamps
- Electric motors
- Packaged commercial heating & cooling equipment

## New California Efficiency Standards

- Distribution transformers
- Torchiere lighting fixtures
- Exit signs and traffic signals
- Commercial reach-in refrigerators, vending machine & beverage merchandiser lighting
- Commercial clothes washers
- Higher efficiency levels for residential and commercial a/c and heat pumps

# Other Opportunities for New Standards

- Furnace and a/c blowers
- Consumer electronics -- standby power and power supply efficiency
- Commercial unit heaters
- Refrigeration improvements to vending machines and beverage merchandisers
- Ice makers
- Large packaged commercial a/c

# ACEEE Analysis of Possible New Efficiency Standards

| Products | National Energy Savings in 2020 | | Summer Peak Load Reduction in 2020 (GW) | NPV For Purchases Thru 2020 | Benefit Cost Ratio |
|---|---|---|---|---|---|
| | (TWh) | (tril. Btu) | | $million | |
| Furnace, A/C & heat pump fans | 61.1 | 609.2 | 27.1 | 28,300 | 7.8 |
| Consumer electronics (standby power) | 32.4 | 323.1 | 4.38 | 16,128 | 5.7 |
| Ceiling fans | 29.4 | 293.3 | 9.42 | 8,074 | 2.8 |
| Torchiere lamps | 19.3 | 191.9 | 6.16 | 7,658 | 3.4 |
| Commercial unit and duct heaters | NA | 149.7 | NA | 4,241 | 6.2 |
| Dry type transformers | 5.4 | 54.1 | 1 | 2,796 | 5.8 |
| Beverage vending machines | 4 | 40 | 1.29 | 1,198 | 4.5 |
| Commercial refrigerators & freezers | 3.2 | 31.8 | 1.02 | 1,375 | 6.8 |
| Traffic signals | 2.6 | 26.2 | 0.35 | 710 | 2.6 |
| Exit signs | 2.3 | 23.3 | 0.32 | 1,179 | 7.5 |
| Commercial clothes washers | 2.1 | 21.3 | 0.69 | 2,000 | 6.7 |
| Beverage merchandisers | 2 | 20.2 | 0.65 | 621 | 5.1 |
| Ice-makers | 1.7 | 16.5 | 0.53 | 564 | 3 |
| Large packaged A/C equipment | 1.4 | 14.2 | 1.38 | 387 | 3.4 |
| **TOTAL** | **167** | **1,815** | **54.3** | **75,231** | **5** |

## Pending Federal Energy Legislation

| Product | House | Senate |
|---|---|---|
| Standards for transformers, exit signs, torchieres, & traffic lights | | X |
| Standby power of consumer electronics | ~1 W | Rulemaking |
| DOE rulemaking for vending machines and ceiling fans | X | X |
| DOE rulemaking for furnace fans | X | |
| DOE rulemaking for commercial refrigerators and unit heaters | | X |

## Past Experience with Standards and MT

- Super-efficient refrigerator program
- Ballast incentives
- Clothes washer programs
- Water heater programs
- Residential central a/c programs
- Commercial packaged a/c programs

## Possible Upcoming DOE Standards

- Furnaces (including their fans)
- Commercial packaged a/c and HP
- Dishwashers
- Another refrigerator update
- Another residential central a/c update (focusing on increasing savings in the field)
- Rulemakings specified in legislation

## Commentary on Codes & Standards

- Standards only appropriate for some products
- Codes are basically for new construction
- Many MT initiatives not appropriate for codes and standards -- need to pursue other transition strategies
- For appropriate products and markets, MT initiatives have a proven track-record influencing codes and standards

## Commentary (continued)

- Sometimes, MT initiatives can be an alternative to standards
  - e.g. Energy Star and office equipment
- Discussions about standards can affect manufacturer involvement in MT programs
  - Can increase or decrease interest in voluntary approaches

## Tax Incentives

- A form of incentive, but financed by tax-payers and not rate-payers
- Federal government offered energy conservation tax credits from 1978-1985
- Federal tax incentives now in pending legislation
- 7 states now offer efficiency tax incentives

## Experience with Past Federal Tax Incentives

- Residential credit of 15% (up to $300) for specified energy conservation measures
- Business credit of 10% for specified measures
- 30 million people used, cost $5 billion
- Surveys indicate that 88% of residential credits were free riders and that credits had little influence on business decisions

## Lessons Learned from the Experience

- Stimulate commercialization of advanced technologies with limited current market share
- Pay substantial incentives
- Choose technologies where first cost is a major barrier
- Establish performance criteria and pay for results

## Pending Federal Tax Incentives

(* = in both House and Senate bills)

- New homes (30%* & 50% savings)
- New commercial buildings (50% savings)*
- Clothes washers and refrigerators*
- Combined heat & power systems*
- Hybrid & fuel cell vehicles*
- Building fuel cell systems*
- Existing homes* (to code or 20-30% savings)
- Advanced residential a/c, HP & water heaters

## State Tax Incentives

| State | Measures Covered |
|---|---|
| Maryland | Green bldgs, appliances, cars |
| N.Y. | Green buildings |
| Oregon | Green buildings, many others |
| Arizona | New homes |
| Hawaii | Heat pump water heaters |
| Idaho | Conventional weatherization |
| N.J. | CHP |

## Most Promising State Initiatives

- Green building tax credits (now in Oregon, N.Y. and Maryland)
- Sales tax waiver for efficient appliances (now in Maryland)
  - Particularly useful when value of credit is a significant share of incremental cost

## Commentary on Tax Credits

- Can be a useful complement to DSM incentives
  - Taps into a different funding source
  - Statewide or nationwide
- Established thru legislation, so not easy to change
- Potentially compete for funding with public benefit funds

# Conclusion

- Codes and standards can be powerful ways to complete the MT process for some measures
  - MT initiatives should seek to influence codes and standards where appropriate
- Tax incentives can be useful, particularly for advanced technologies with minimal current market share
  - Uniform incentives across a broad region