

What Conservation is Available Beyond Traditional Cost-Effectiveness Limits?

Oregon Carbon Allocation Task Force Technical Working Group

11 May 2006

Or
Is This As Good As It Gets?



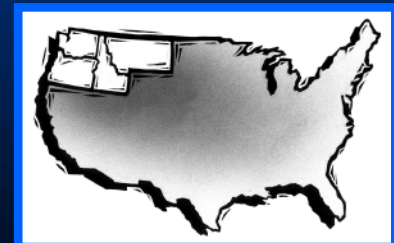
Sources

- In Supply Curves but not Cost-Effective
 - Council
 - Energy Trust
- Known Measures Not in the Supply Curves
 - From ODOE
 - From Others

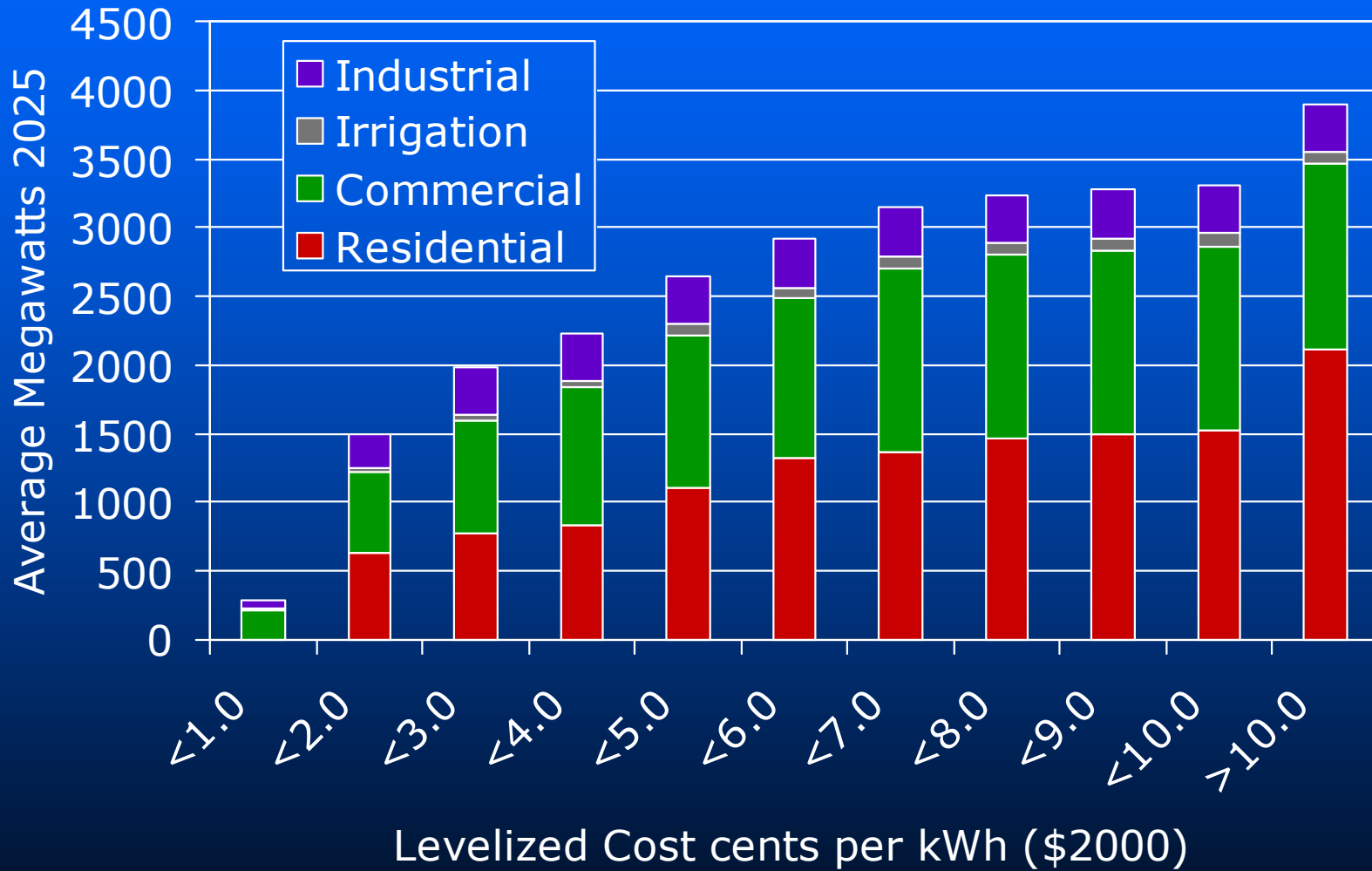
Caveats



- Approximate scale and cost only
- Measure search does not seek out high cost
- Did not consider fuel switching
- Numbers for “medium” case load growth
 - But reality will not unfold as medium case
- Oregon share of region approx 30%
 - But your mileage may vary



Conservation Supply Curve Achievable by 2025

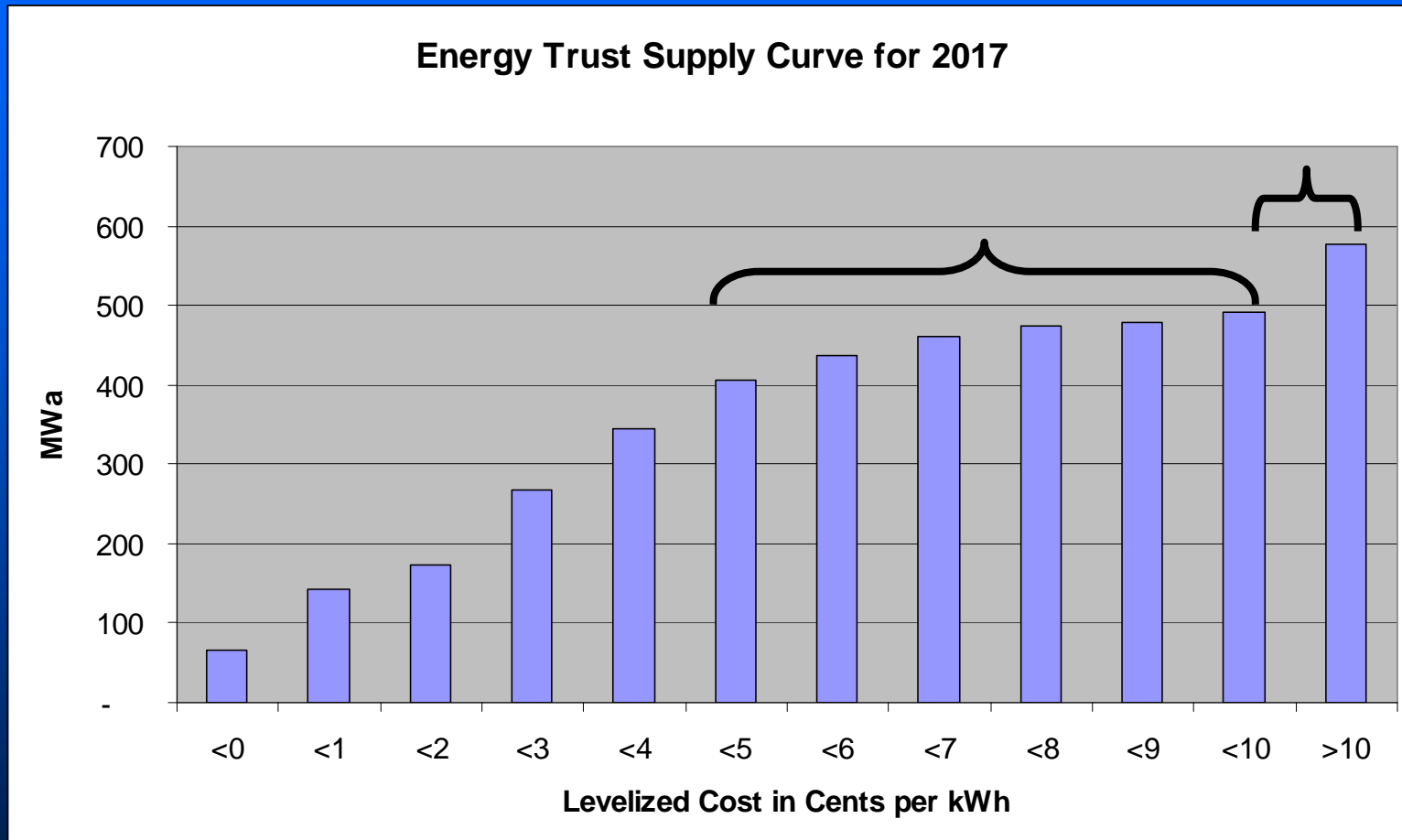


Council Supply Curves

- ~1300 MWa available, but not cost-effective
 - ~700 MWa between 5 & 10 cents/kWh
 - » Mostly measures that are cost-effective under some conditions but not others
 - » Example: Res. Space Heat Pump in warm climate
 - » Example: Lighting T8 to HPT8 in schools
 - ~600 MWa more than 10 cents/kWh
 - » Solar WH, Solar PV, various Res. HP conversions, some appliances, most windows

~200 MWa
Oregon

Energy Trust Supply Curves



Energy Trust

- Overall similar to Council supply curve
- ~100 MWa 5 to 10 cents per kWh (2017)
 - ~160 MWa scaled up to 2025 and all Oregon
- ~90 MWa > 10 cents per kWh

Specific Measures (1)

- Heat Pump Water Heaters
 - Council assumes low penetration (25%)
 - 75% penetration might add ~400 MWa region
 - So 100 to 150 MWa in Oregon
- Low-Temp & CO2 Heat Pumps
 - Similar measures in 5th Plan Curves
 - MWa & cost largely in supply curves

Specific Measures (2)

- Evaporative Cooling (Commercial)
 - Small packaged Roof-top HVAC
 - Not ready for prime time in 5th Plan
 - PNW cooling loads are low, some measures in curve
 - Analyzed Direct & Indirect types in 3 climate zones
- Results
 - Expensive: 80% at ~10 cents per kWh
 - » Higher EERs, lower costs, capacity credit could get to 7 cents
 - Many uncertainties: retrofit weight & size limits
 - ~100 MWa regionwide +/- 50 MWa
 - ~30 MWa for Oregon
 - Still not ready for prime time

Specific Measures (3)

- Conservation Voltage Reduction
 - Savings 1% to 2% system load
 - Costs still at large
 - 200 MWa Region, 70 MWa in Oregon

Summing Up for Oregon

- In the 5-10 cent/kWh range (360-500 MWa)
 - 160 to 200 MWa additional in supply curves
 - 100 to 150 Res. Heat Pump Water Heater
 - 30 MWa Comm. Evap Cooling (maybe)
 - 70 to 120 MWa CVR (maybe)
- More than 10 cents/kWh (100-200 MWa)
 - 200 MWa various measures (prorate 5th Plan)
 - 100 MWa Trust Study