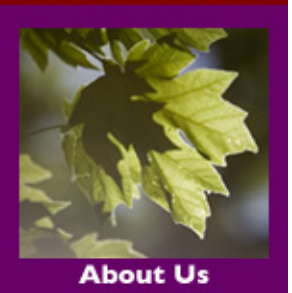


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# Energy Efficiency Resource Assessment and Supply Curves 2008 – 2027

**February 11, 2009**

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# Overview of presentation

**Purpose**: to show the Technical and Achievable, cost effective potential over the 20 year planning horizon.

- Discuss what is new to this update
- Describe the steps of the estimation process
- Present total potential for both PPL, PGE, NWN, and CNG.
- Provide estimates of potential by Sector and End Use.
- Talk about next steps:  Bundling measures into programs, and deploying programs over the 20 years.

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# What's New?

- Updated utility data
- Updated baseline, high efficiency specifications, and costs
- Added Benefit/Cost Ratios
- Addressed emerging technologies
- Industrial model can separate self direct and >1aMW

# New measures

- Home energy monitors
- Refrigerator recycling
- Minisplit heat pumps
- New Energy Star homes
- Heat pump water heater
- Low Power Mode Appliances
- High efficient gas water heater

# Before You Start – Decide On A Cost-Effectiveness Metric

- Participant Cost Test (PTC)
  - Costs and benefits to the program participant
- Total Resource Cost (TRC)
  - All Quantifiable costs & benefits regardless of who accrues them. Includes participant and others' costs
- Utility Cost Test (UTC)
  - Quantifiable costs & benefits that accrue only to the utility system. Specifically excludes participant costs
- Rate Impact Measure (RIM)
  - Net change in electricity utility revenue requirements.
    - Attempts to measure rate impact on all utility customers especially those that do not directly participate in the conservation program
    - Treats "lost revenues" (lower participant bills) as a cost

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# Cost Benefit Tests

- BCR = NPV of benefits / Total Resource Cost
- NPV of benefits includes:
  - Savings * Avoided Costs
    - Avoided costs include adjustments for line losses, hedge value (electric only), and a carbon adder
    - quantifiable non-energy benefits are also included



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# Inputs to Resource Potentials Assessment Methodology

- Availability
  - Scope of measures
    - Technologies
    - Practices
  - Applicability territory
    - Number of units
    - Units savings
  - Achievable over time
    - Retrofit
    - Lost-Opportunity

- Costs
  - Materials & labor
  - Annual O&M
  - Periodic Replacement
  - Program Admin
  - Externalities
  - Other non-electric

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# Summary of Technical Potential by Utility for the years 2008-2027

| **Electric Utilities** | **PGE aMW** | **PPL, aMW** | **Both Utilities, aMW** |
|---|---|---|---|
| Residential | 32 | 67 | 99 |
| Commercial | 179 | 123 | 270 |
| Industrial | 223 | 82 | 305 |
| Total (Including cross-utility impact) | | | 651 |
| **Natural Gas Utilities** | **NNG, Mmtherm** | **CSG, Mmtherm** | **Both Utilities, Mmtherm** |
| Residential | 76 | 21 | 97 |
| Commercial | 38 | 2 | 40 |
| Industrial | 15 | | 15 |
| Total (Including cross-utility impact) | | | 153 |

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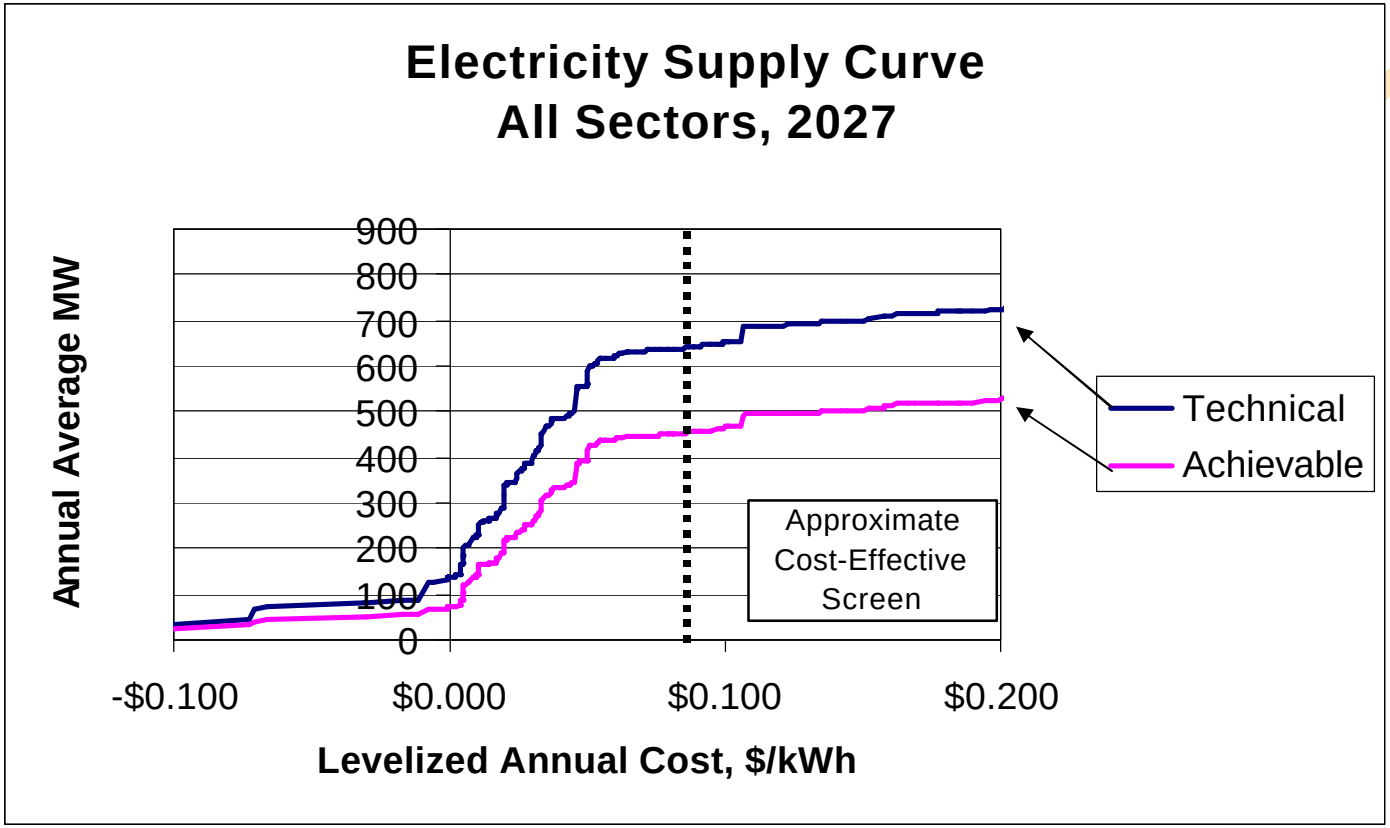
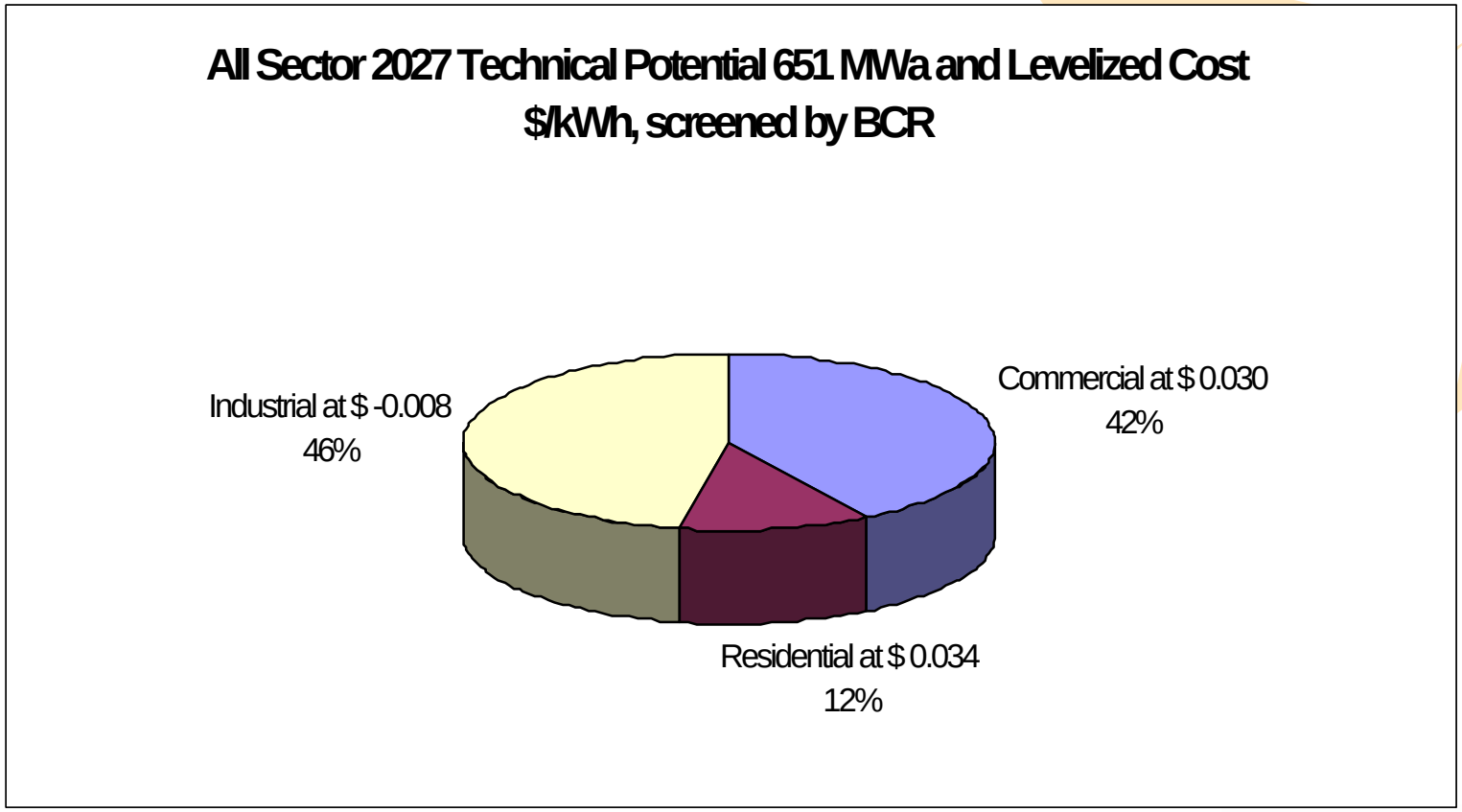
# 2008 - 2027 Draft Supply Curve for ETO - Oregon Electric IOU's

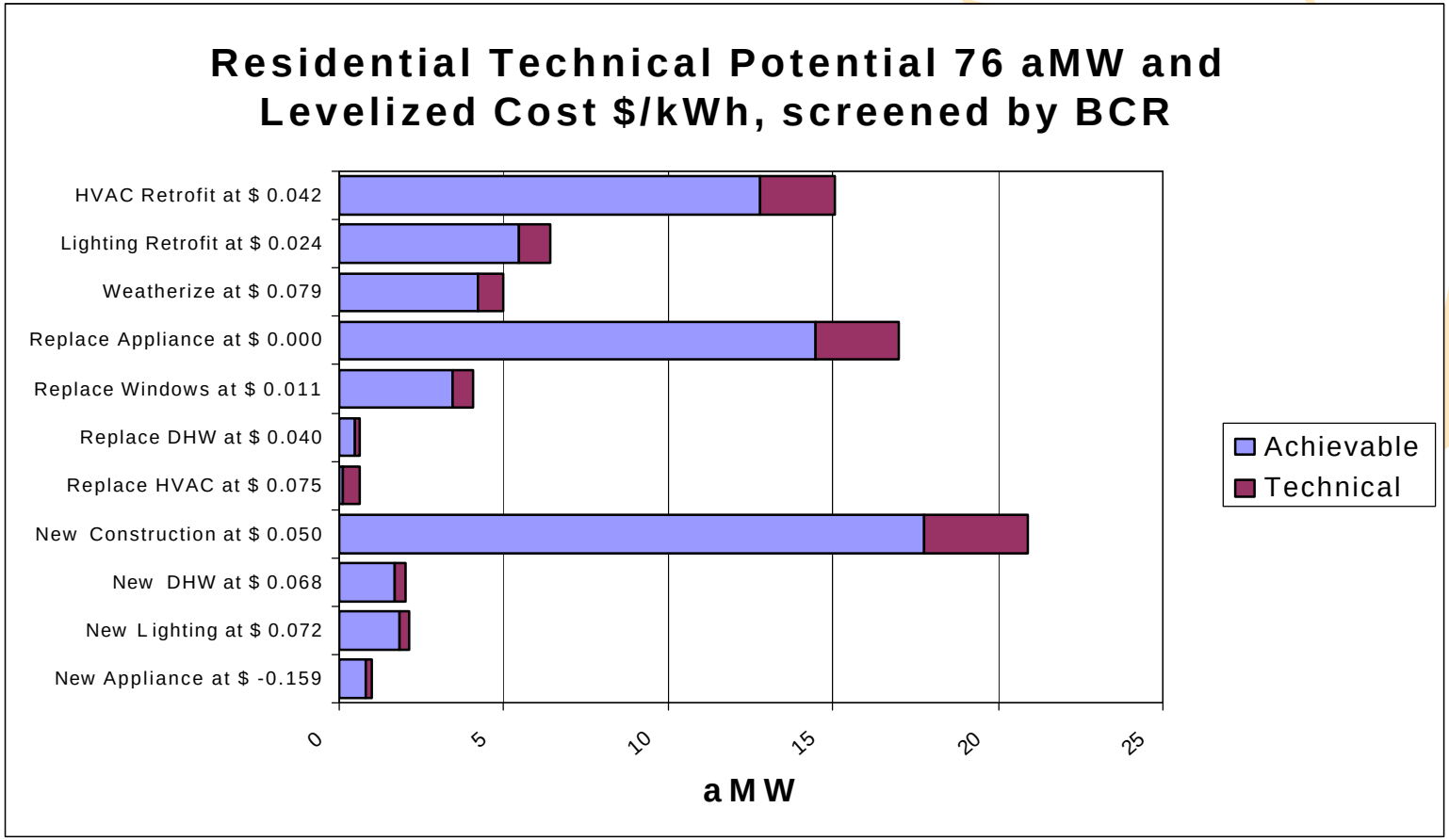
- 651 aMW of Technical Potential at $0.095/kWh Levelized cost



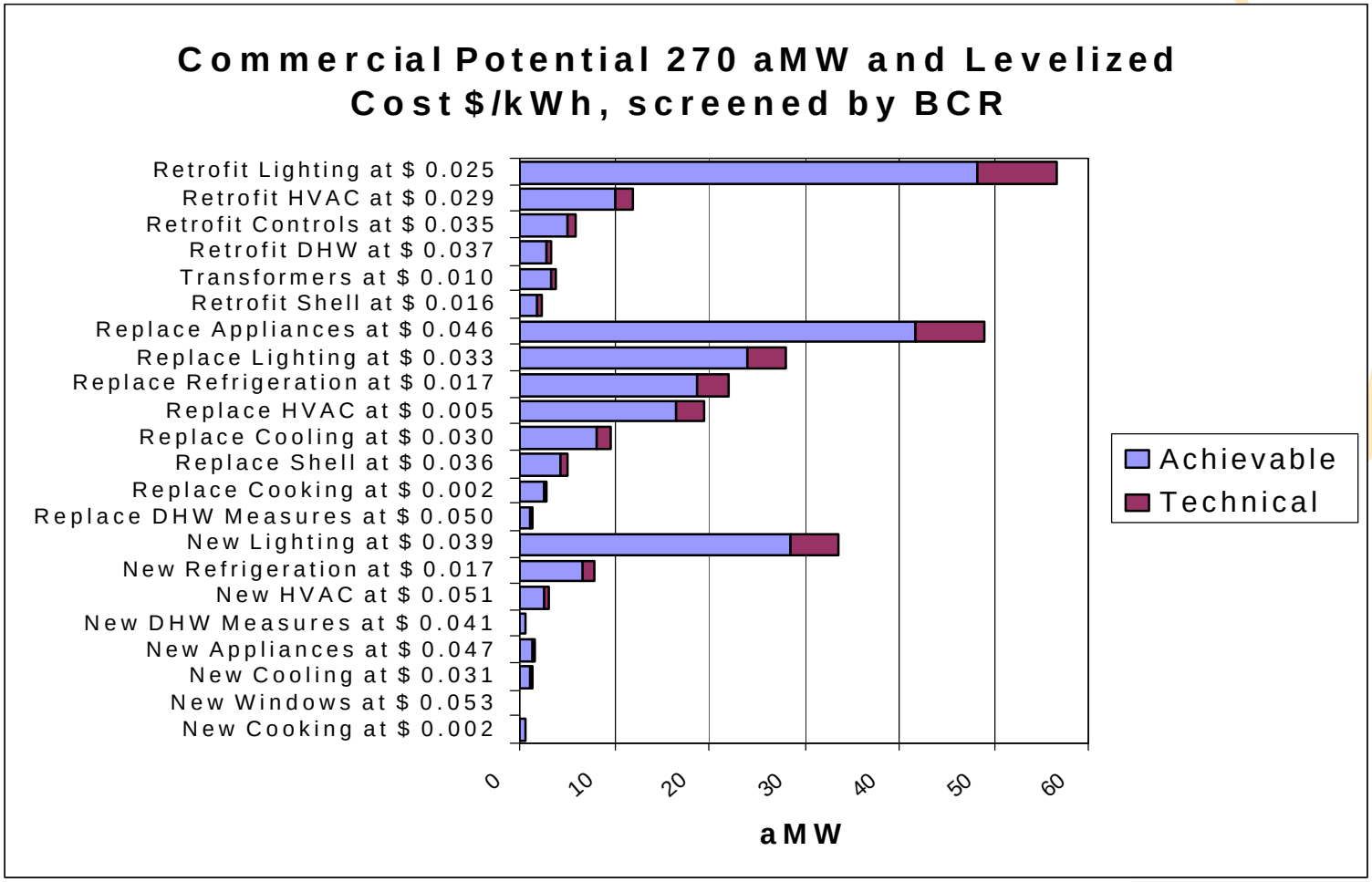
# 2008-2027 Sector Percentages of Technical Potential - Electric



# 2008 - 2027 Residential Sector - Electric



# 2008 – 2027 Commercial – Electric Potential

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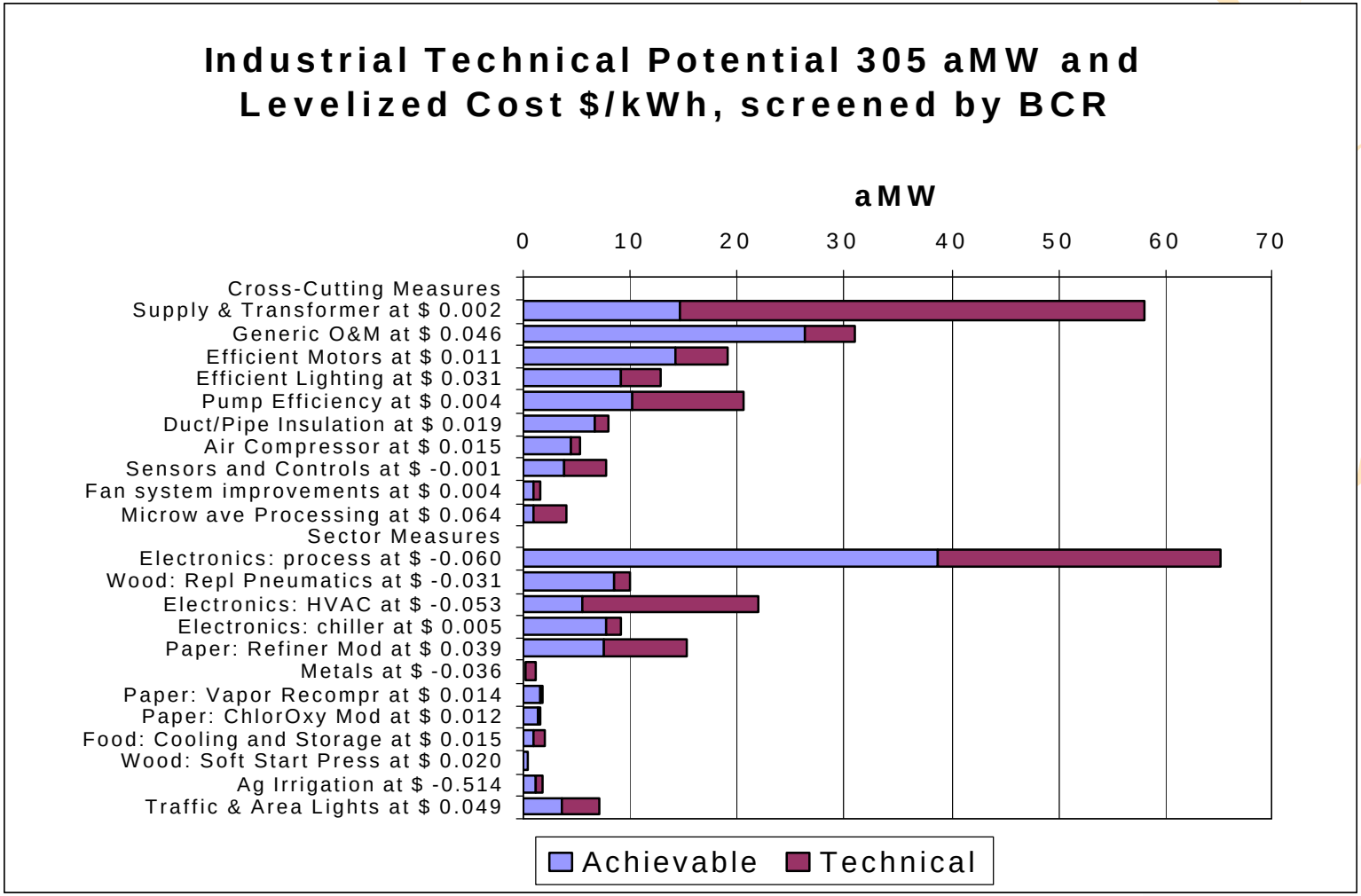
# 2008 - 2027 Industrial Sector – Electric Potential

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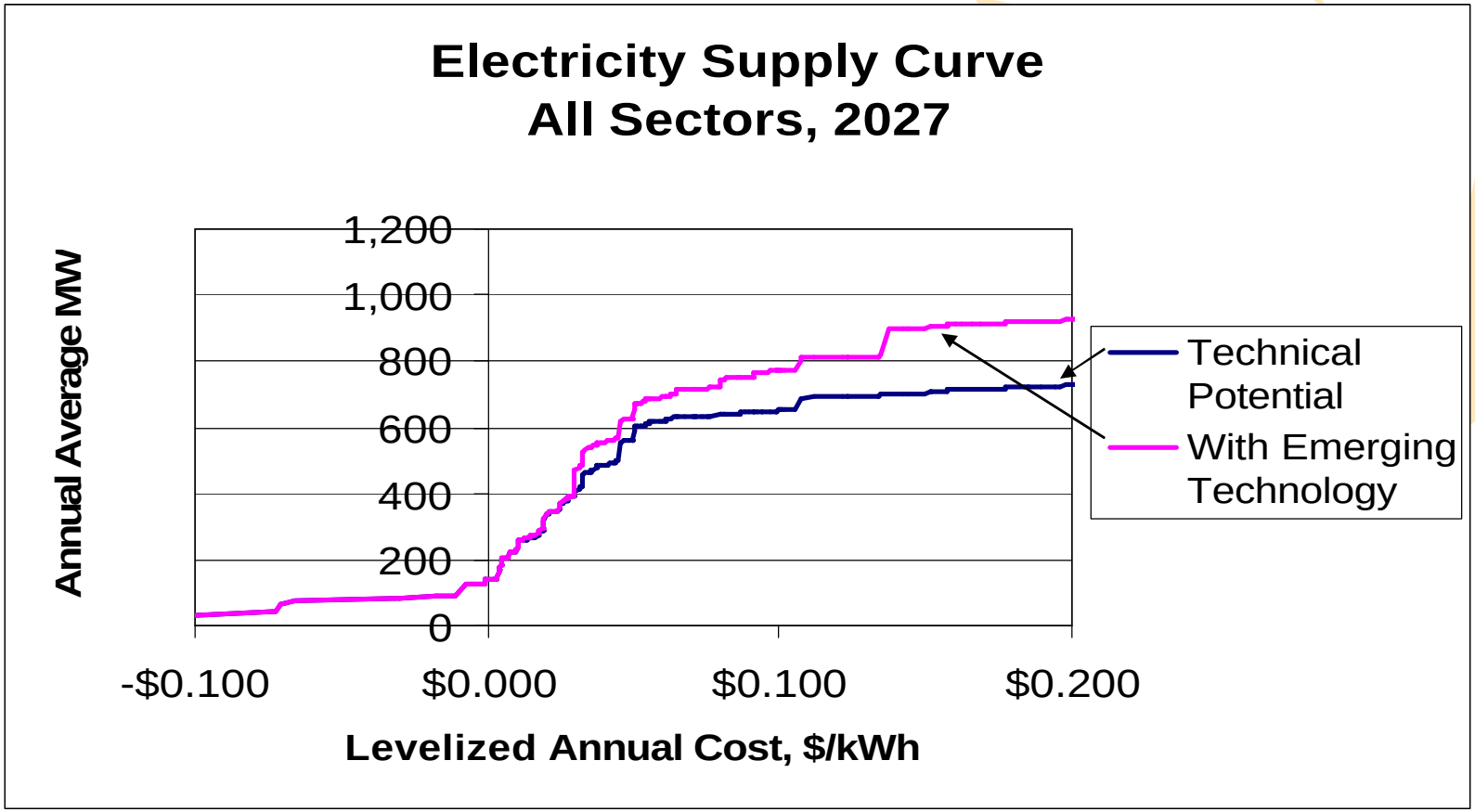
# 2008 - 2027 Draft Supply Curve for ETO - Oregon Electric IOU's with Emerging Technologies



# Emerging Technology Potential

| Measure | aMW Savings |
|---|---|
| New Appliance | 20 |
| New DHW | 4 |
| New Lighting | 2 |
| Replace Appliance | 56 |
| Lighting Retrofit | 23 |
| Heat Pump HW | 2 |
| HVAC Retrofit | 10 |
| **Total** | **117** |

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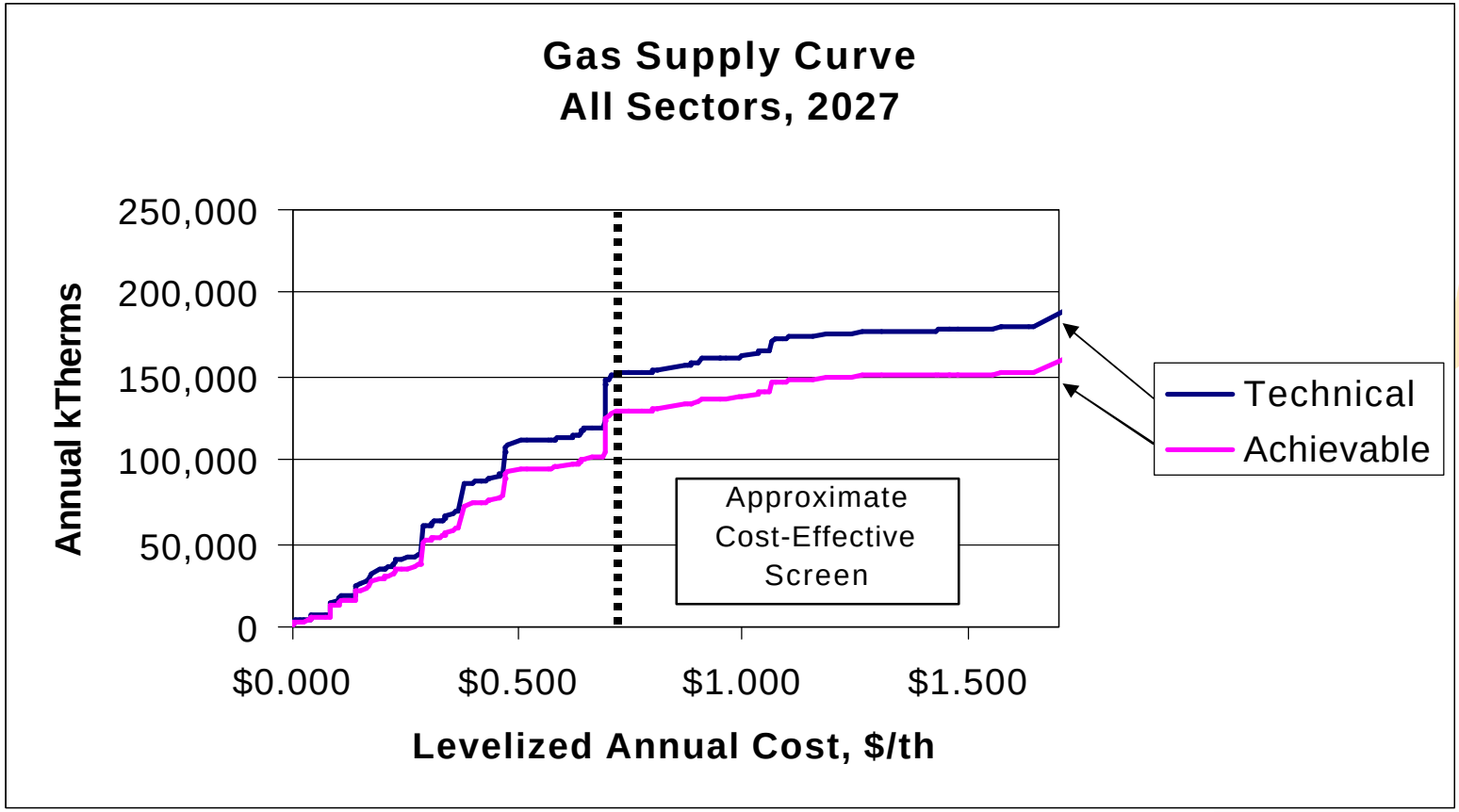
# 2008 Draft Supply Curve for ETO - Oregon Natural Gas Utilities

- 151 Million therms of technical potential @ $.70/therm levelized cost

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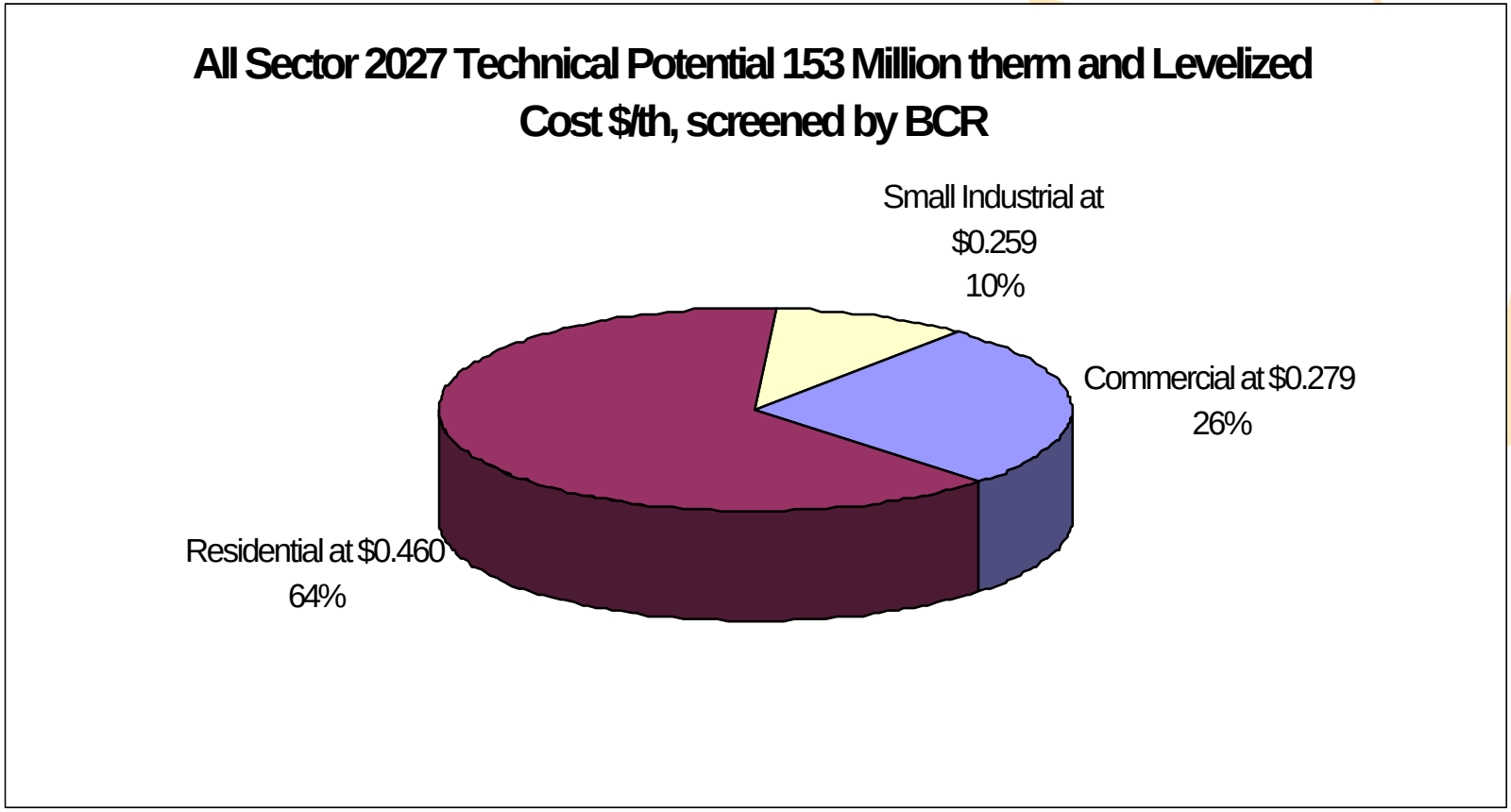
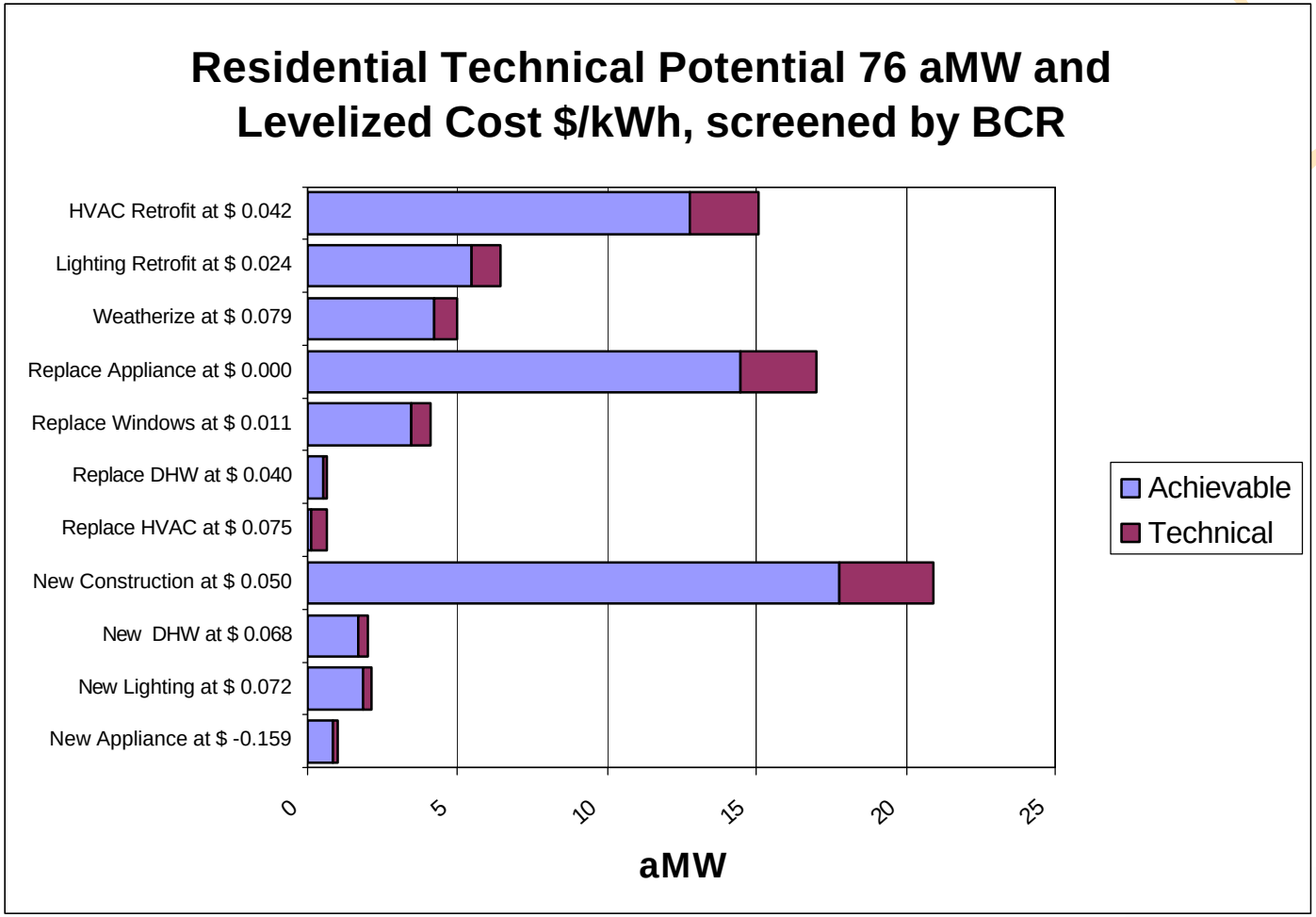
# 2008 Sector Percentages of Technical Potential - Oregon Natural Gas Utilities



# 2008 – 2027 Residential Sector - Natural Gas Potential

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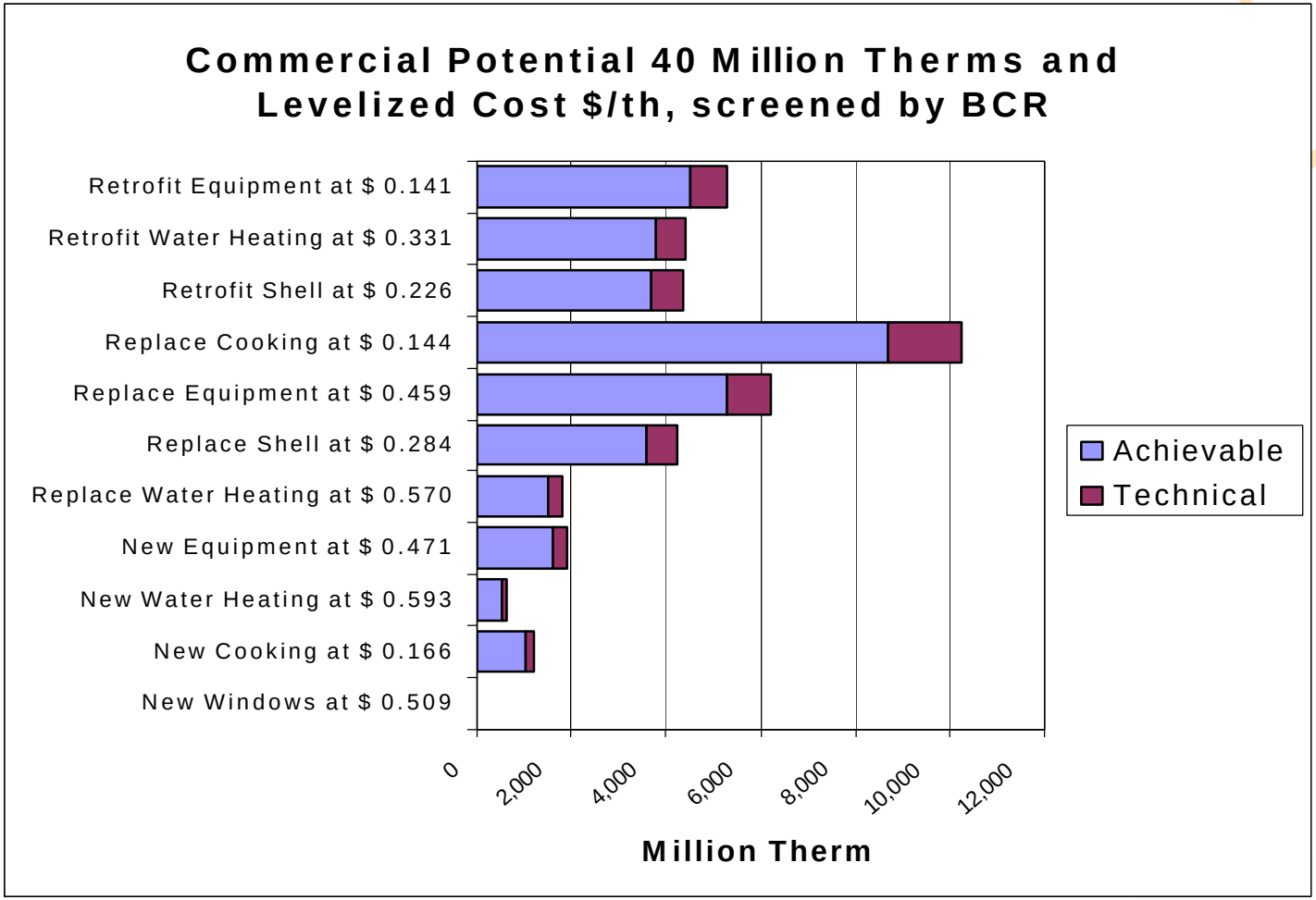
# 2008 – 2027 Commercial Sector - Natural Gas Potential

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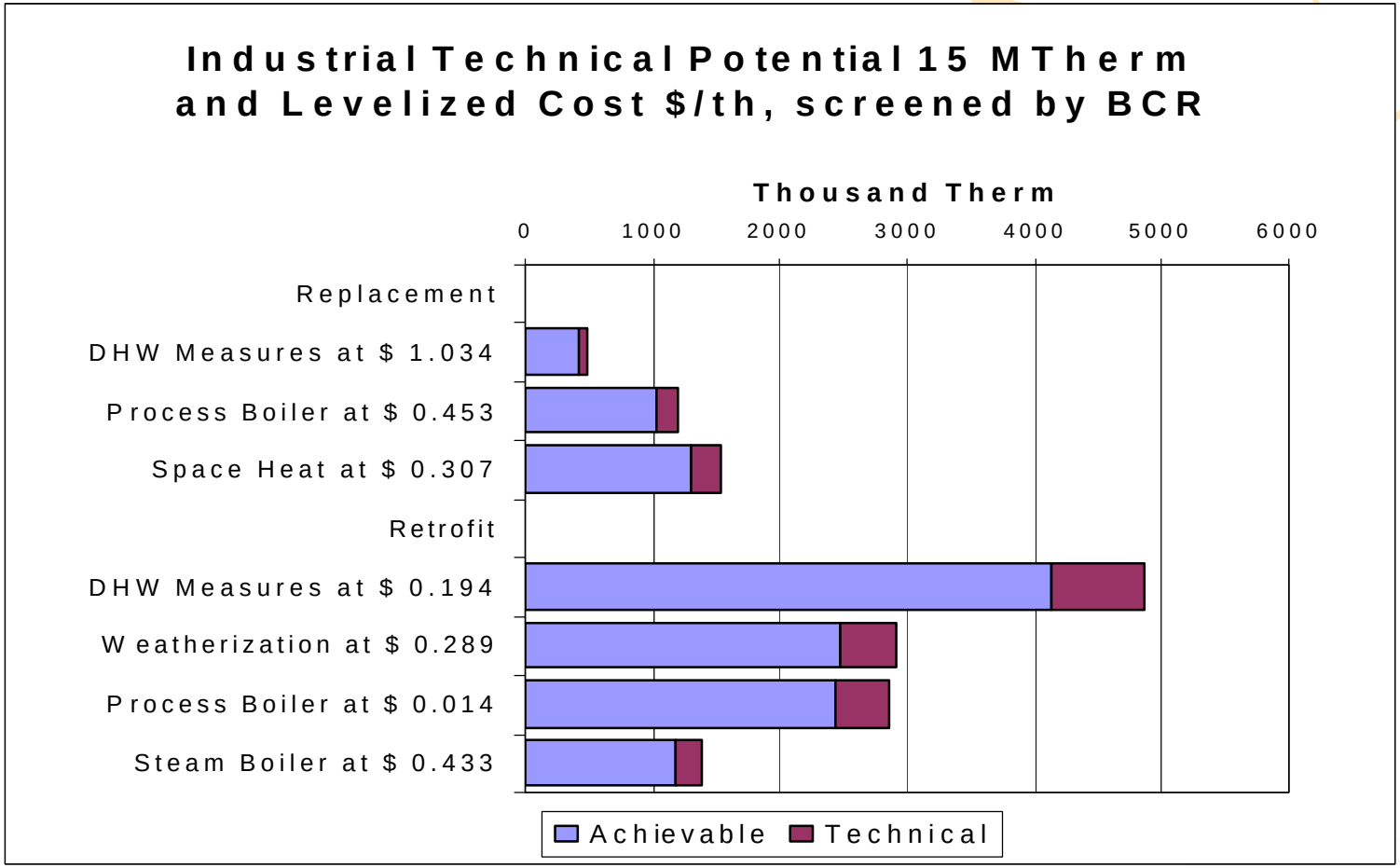
# 2008 – 2027 Industrial Sector - Natural Gas Potential

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# Next Steps

- Program Budgets – Ramping in new measures, going deeper with existing programs (2 years).
- Deployment Scenarios (20 years).
- Integrate with utility IRP's

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