Competitive Electricity Markets for Competitive Environmental Policy

Steven B. Corneli

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Vision and values

Competition aligns the private incentive to make profits with the public interest in efficient use of resources, cost minimization, and innovation.

- An efficient, low cost, and reliable electric system is essential for the nation's economy – competitive outcomes are in the public interest.
- Electric generation is a significant source of air emissions – efficient, low-cost means to meet or exceed emission standards are also in the public interest.
- ***Competitive electric markets and competition-friendly environmental policies should be designed to work together to spur innovation and reduce total costs.***

Electric industry – then and now

- Prior to 1999, investors recovered costs and profit through regulated monopoly rates.
- All investments found “used and useful” and “prudent” were included in regulated monopoly rates.
- Legally required or unavoidable costs were passed through to captive customers in rate increases approved by regulators.

- After 1999, investors recover costs and profit through market prices.
- Competitive pressure, supply and demand, and market design determine whether legally required or other unavoidable costs can be recovered – there are no “rates” or captive customers to pass such costs through to.
- Financial markets and investors assume the risk of investment decisions, not captive customers – no more “stranded costs”.

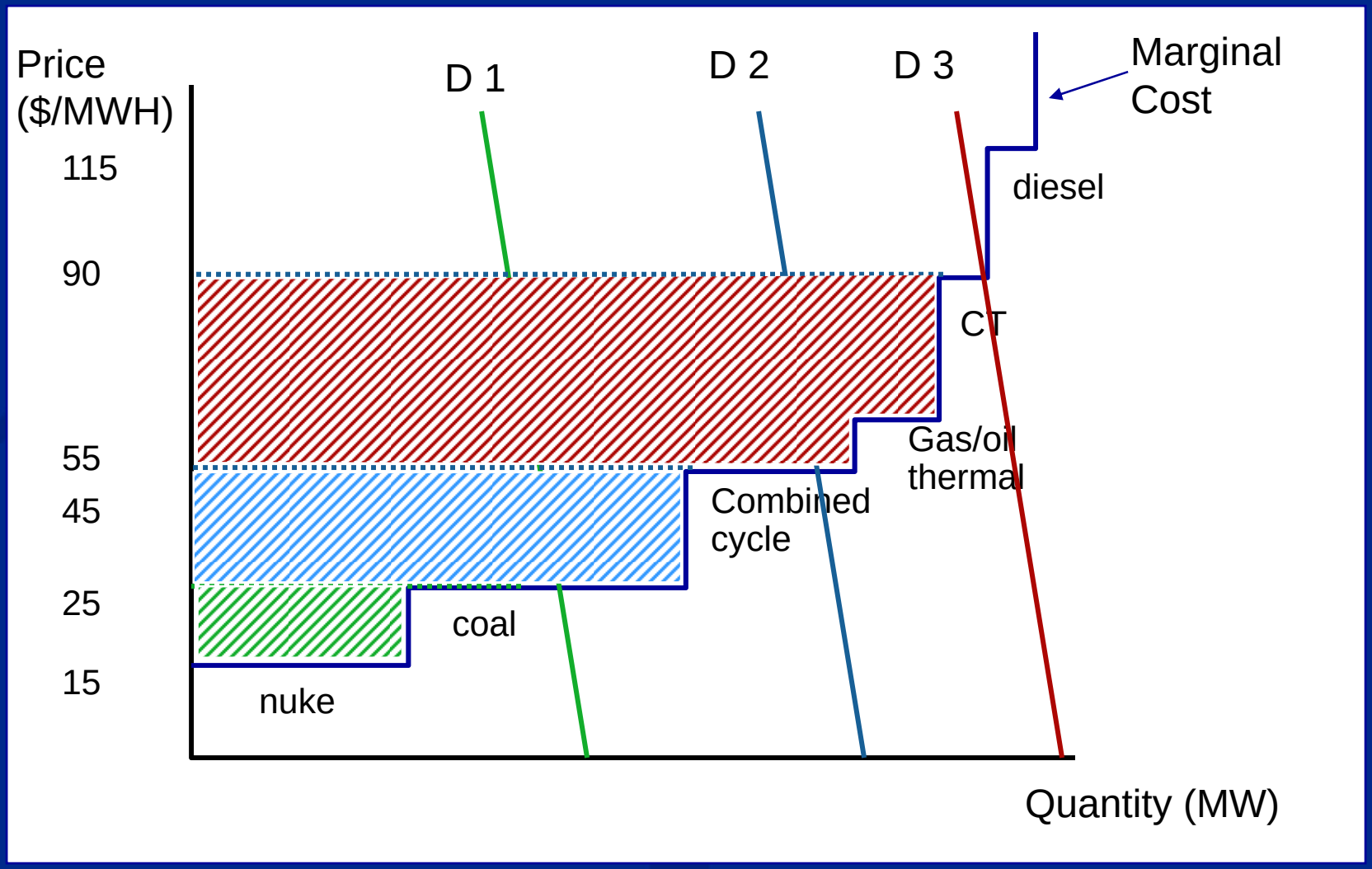
Electricity market basics

- Needed and efficient technology earns a profit by earning market prices that recover fixed and variable costs.
- Fixed costs are costs that do not vary with electricity output, such as depreciation, overhead, property taxes, insurance, fixed labor, and the cost of capital.
- Variable costs are costs that vary with output, such as fuel and O&M and, at times, emission allowances.
- Organized electric markets in the OTC region and – soon – in the Midwest have unique means for allowing investors to recover fixed and variable costs.
- Investments in lower emission technology must be more profitable **in these markets** than higher emission technology, or investors will not adopt the new technology.

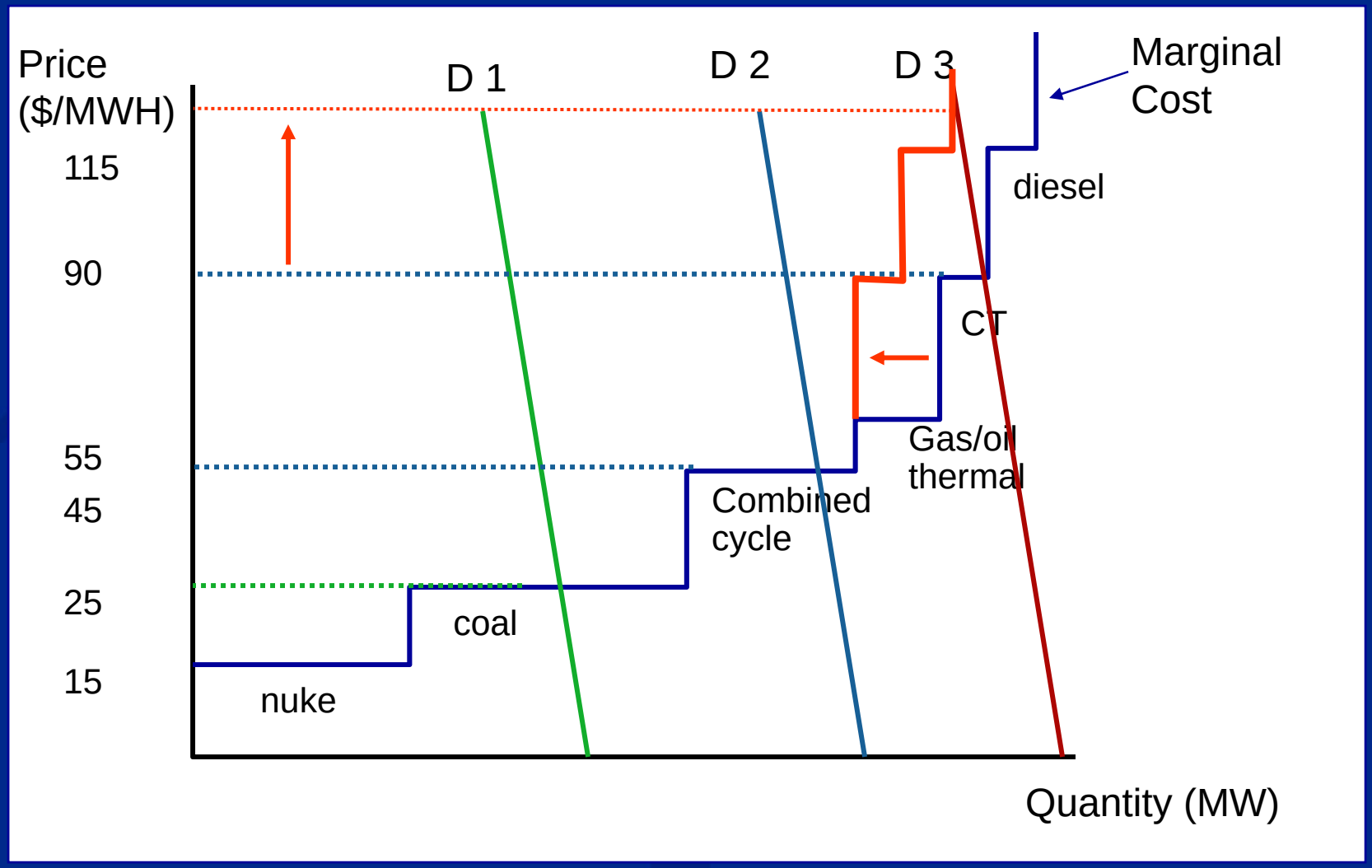
Energy and Capacity Markets

- Energy markets pay all generators the variable costs of the last generator dispatched to meet power supply needs. Marginal generators only get their variable costs back in energy markets, while generators with lower variable costs also recover some fixed costs.
- Capacity markets *should* pay all generators the fixed costs of the last generator dispatched to meet load. Marginal generators would recover all their costs, and other generators recover any additional shortfalls in fixed cost recovery.
- Both markets together must send the right signals for investors to provide enough generation for reliability, in the right places, and in the right mix to minimize cost.

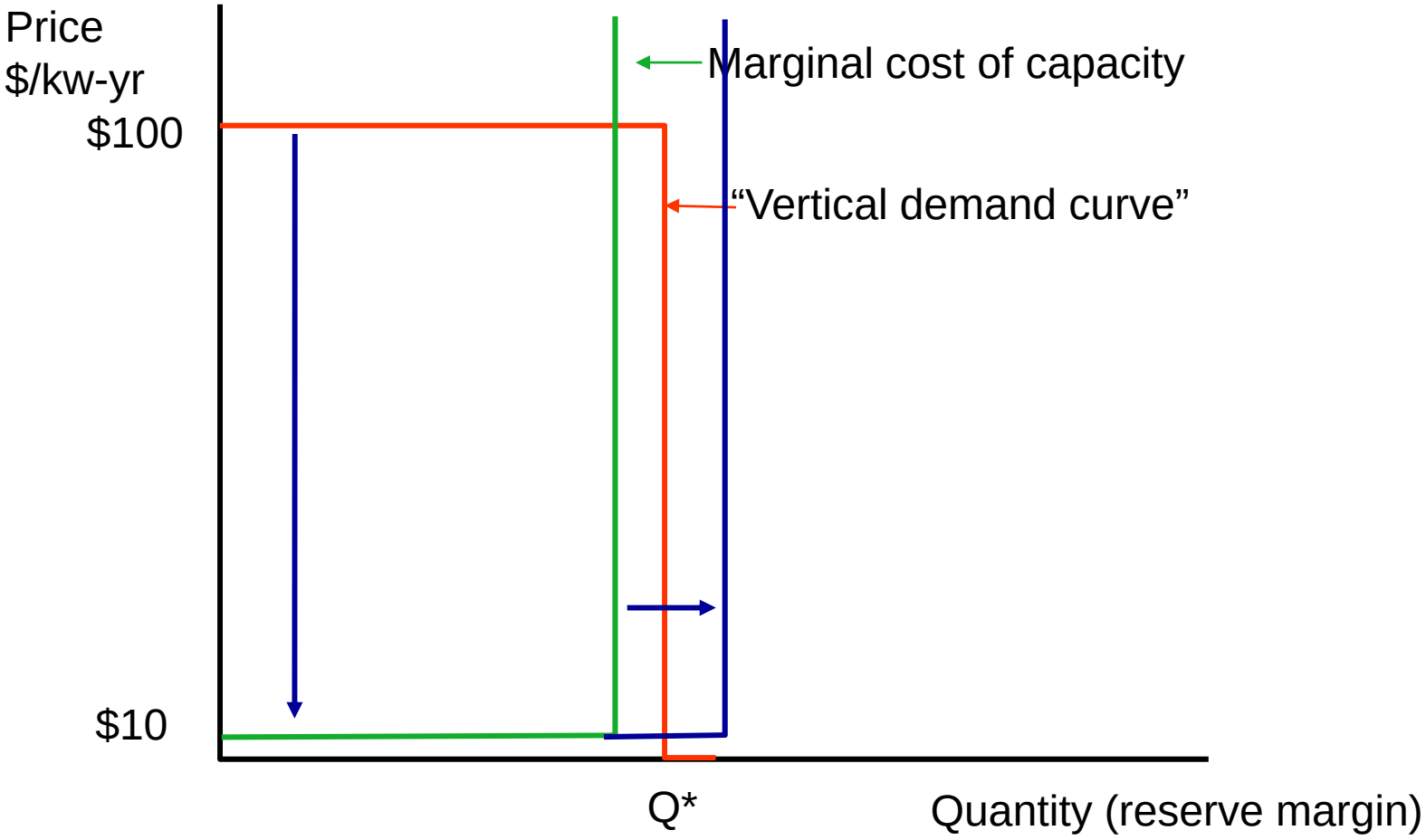
Energy markets at work



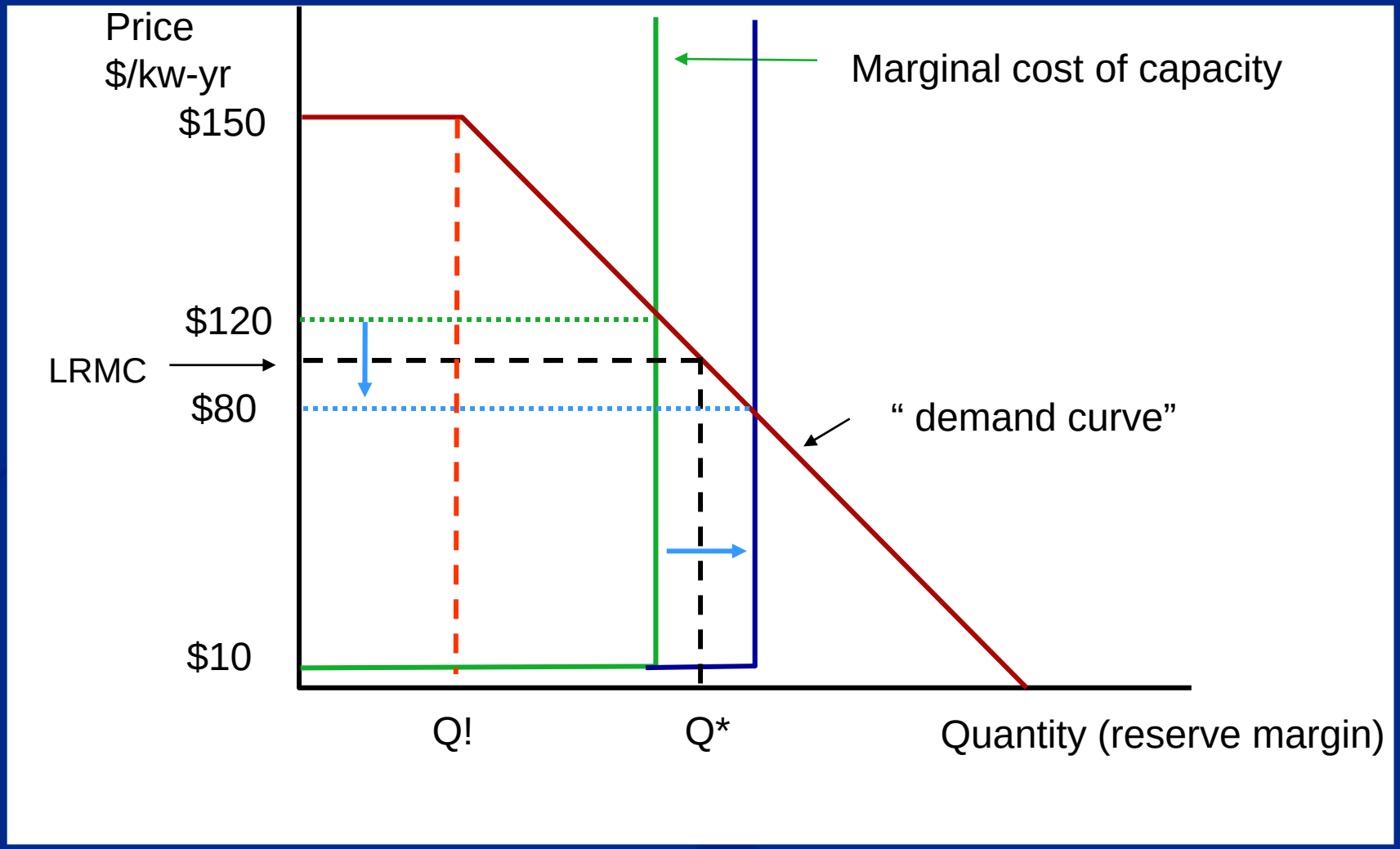
Energy markets at work



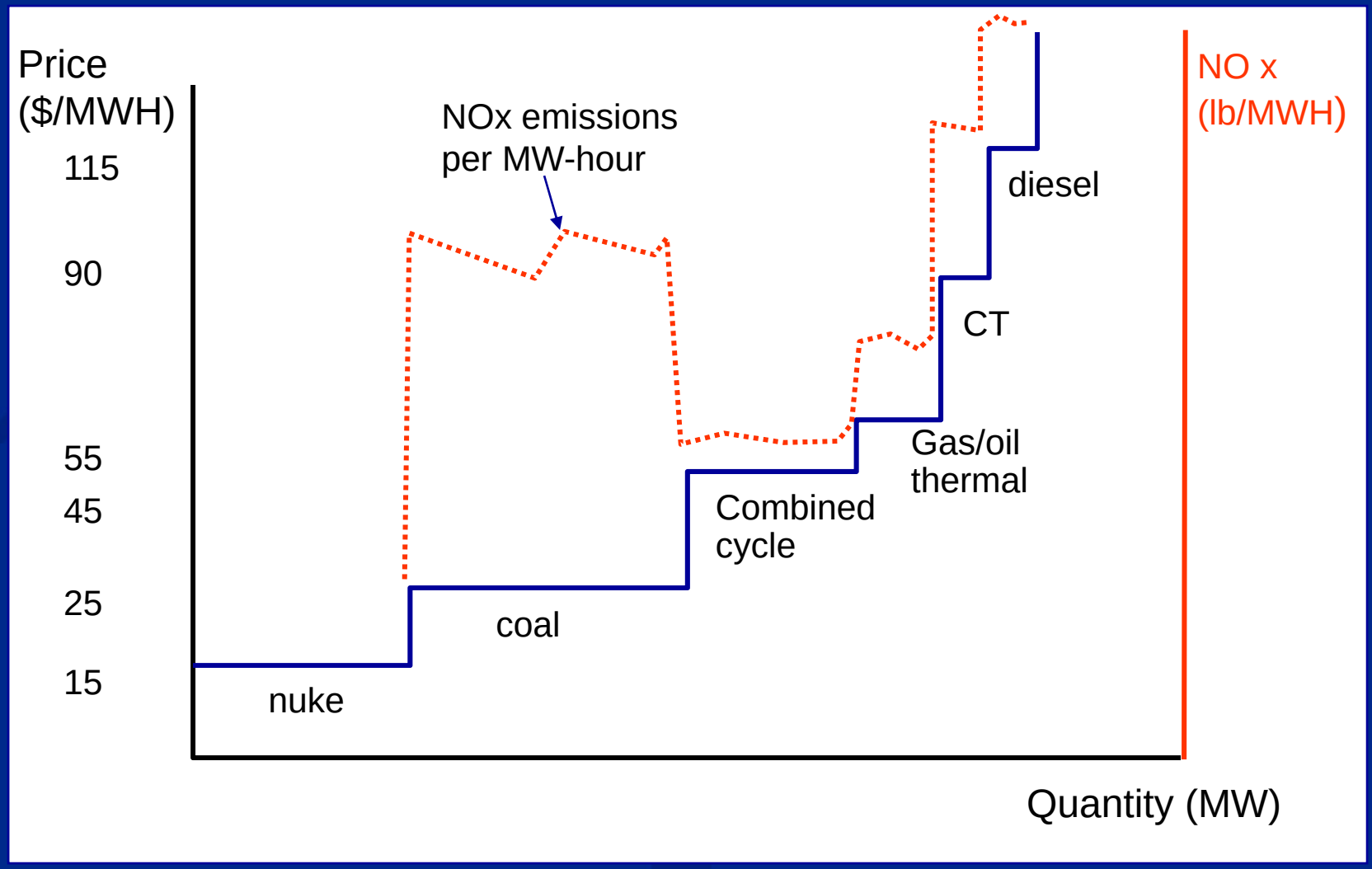
Capacity markets – old style.



Capacity markets – new style



NOx versus merit order



Challenges and opportunities

- Oversupply may make prices too low, for some time, to allow investors to earn a return on new technology that reduces emissions.
  - Low prices do lead to retirement of less efficient technology and thus to higher prices.
  - ➢ Environmental policy should recognize economic and reliability needs, e.g., support fuel switching and other low-cost emissions reductions in units needed to prevent economic price shocks or harm reliability.

Challenges and opportunities

- Current capacity market design may not make efficient technology that meets and exceeds emission requirements profitable.
  - Capacity markets should include cost of meeting all emission requirements in LRMC basis for capacity prices. This will make low emission peakers profitable and support efficient environmental policy.
  - Clean baseload technologies may need an additional boost, e.g., development grants for clean coal and high capacity factor renewables.
  - Constrained and densely populated areas present additional costs and reliability needs, so capacity markets must be designed to target the efficient investment uniquely needed in those areas.