Keep the Door Open for Micro-Grids

Thomas E. Hoff
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Presentation to NARUC, July 27, 1998

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Outline

- Where we are today and where we could be in the future with clean distributed resources
- Is such a system technically and economically feasibility?
- How do micro-grids fit into the picture?
- What are the policy implications?

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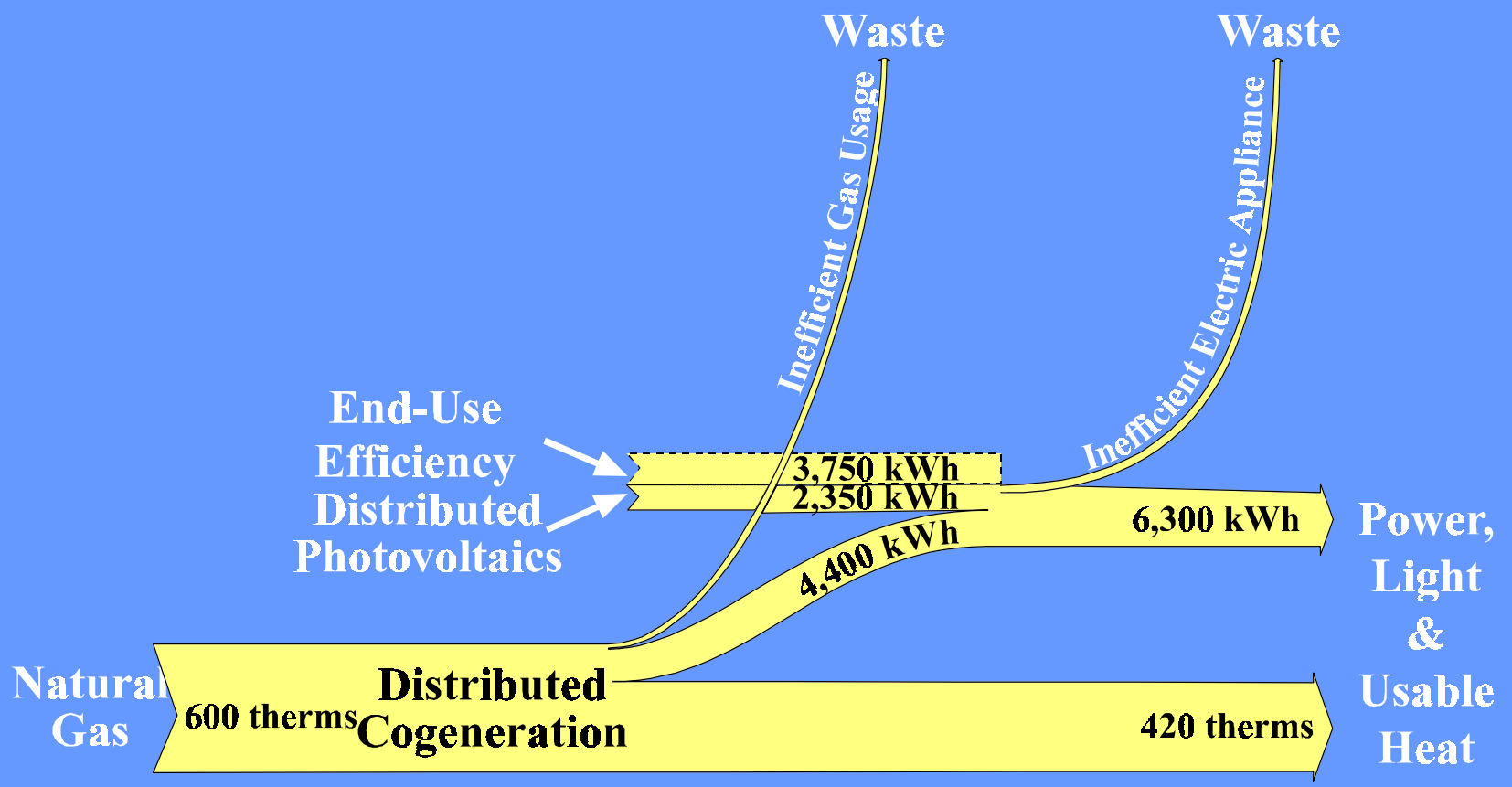
Where We Could Be
Consump. With Clean Distributed Resources



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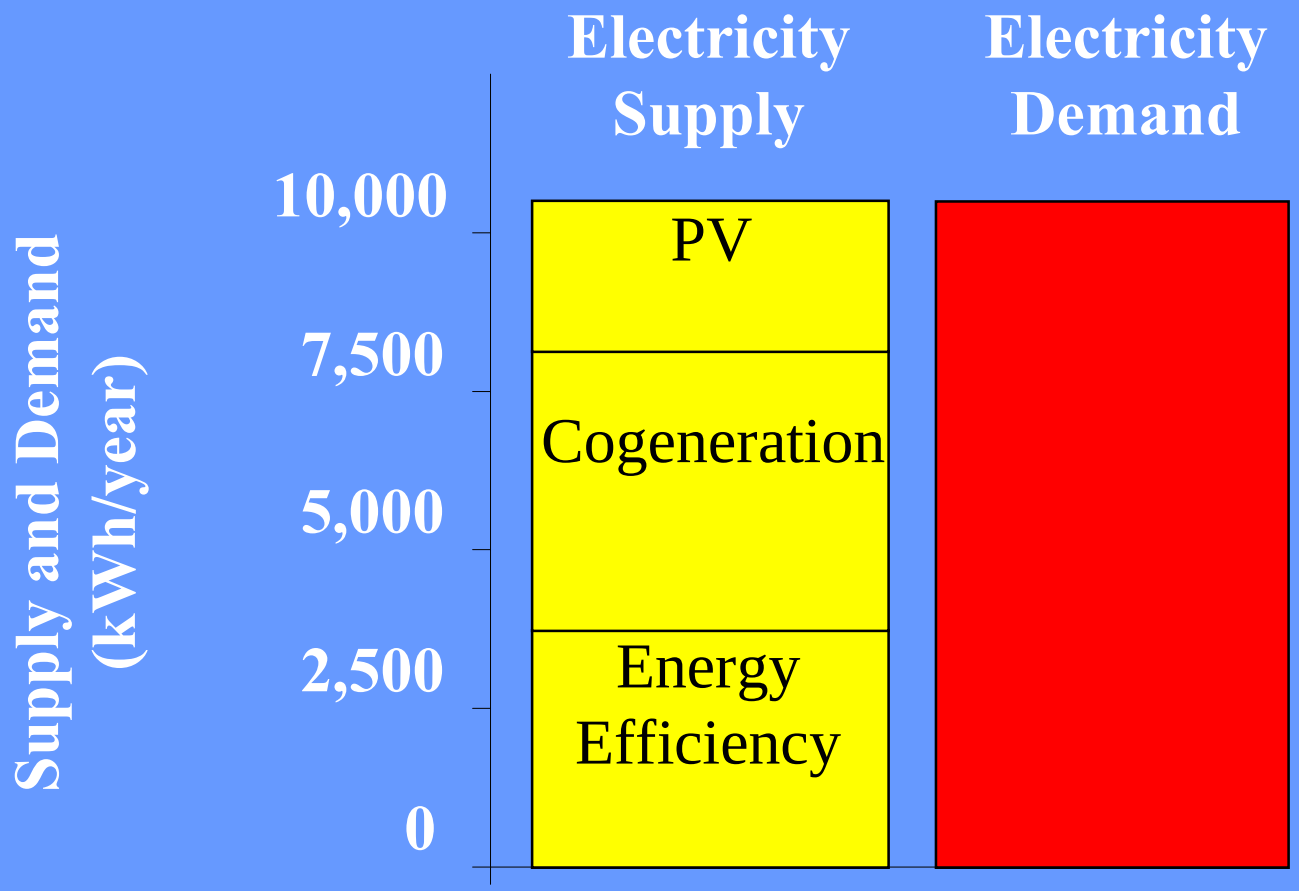
NREL

There is a Good **Annual** Match Between Supply and Demand



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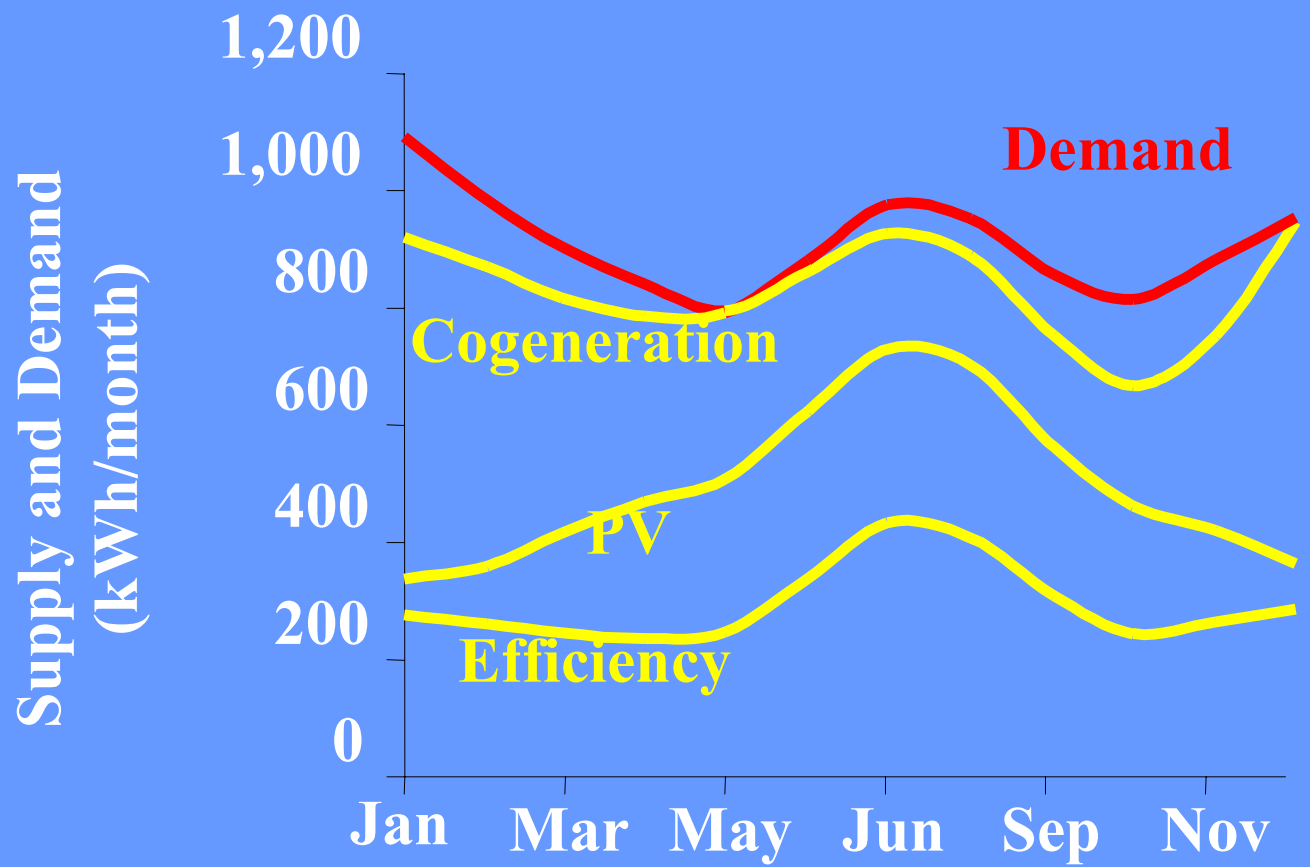
NREL

There is a Good **Monthly** Match Between Supply and Demand



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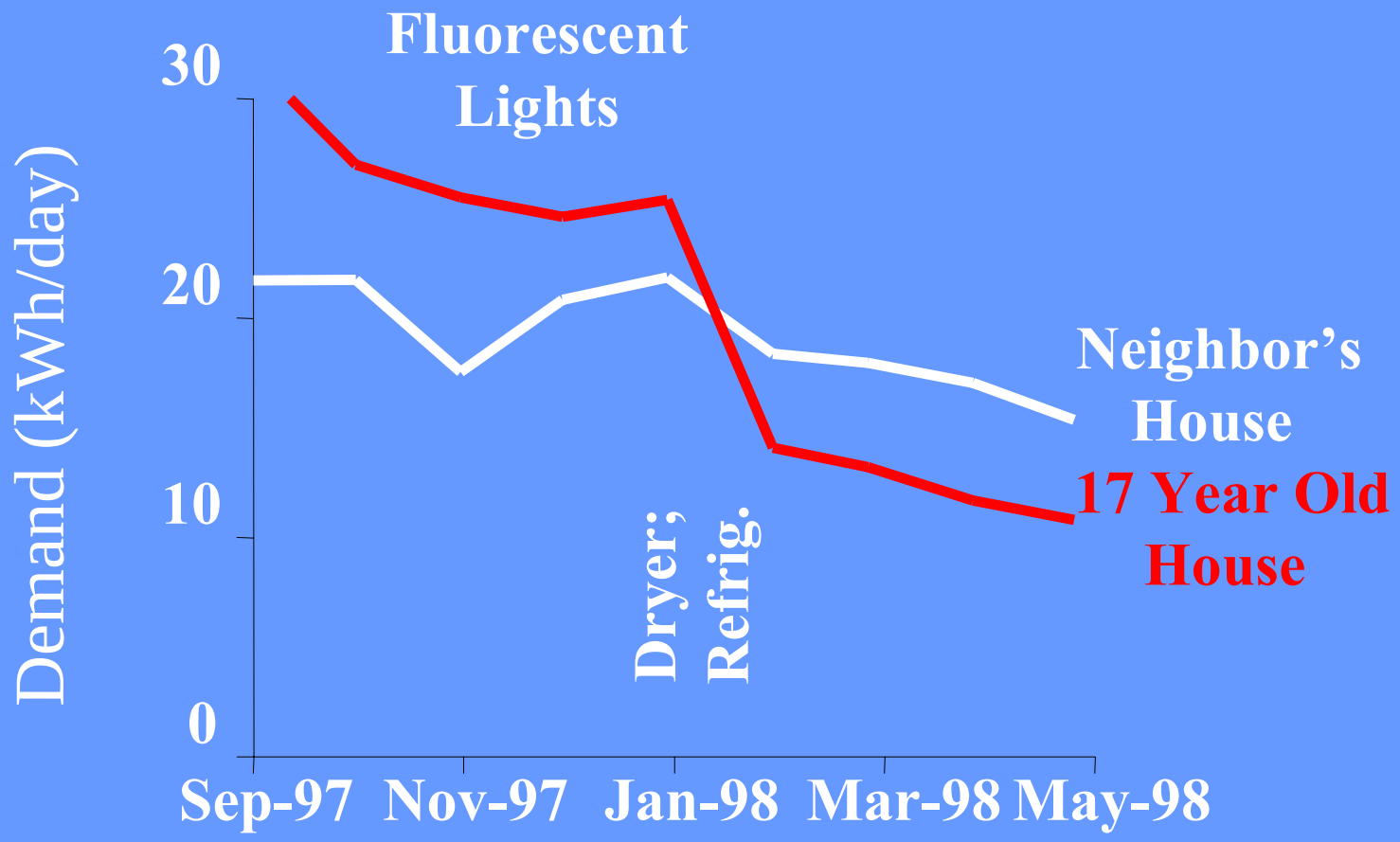
End-Use Efficiency Investments Are Already Economically Feasible



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Market Barriers

- The capital cost of PV is a factor of 3 or 4 too high without any subsidies
- There are no 2-kW residential cogeneration products available in the market
- Match between supply and demand is not perfect
- A different market structure may be required

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What is a Micro-Grid and Why Have a Micro-Grid?

- A micro-grid is an electrically isolated set of generators that supply all of the demand of a group of customers
- A micro-grid can provide service where there is no utility grid
- A micro-grid can introduce competition to the T&D system; this may encourage T&D utilities to accept clean resources

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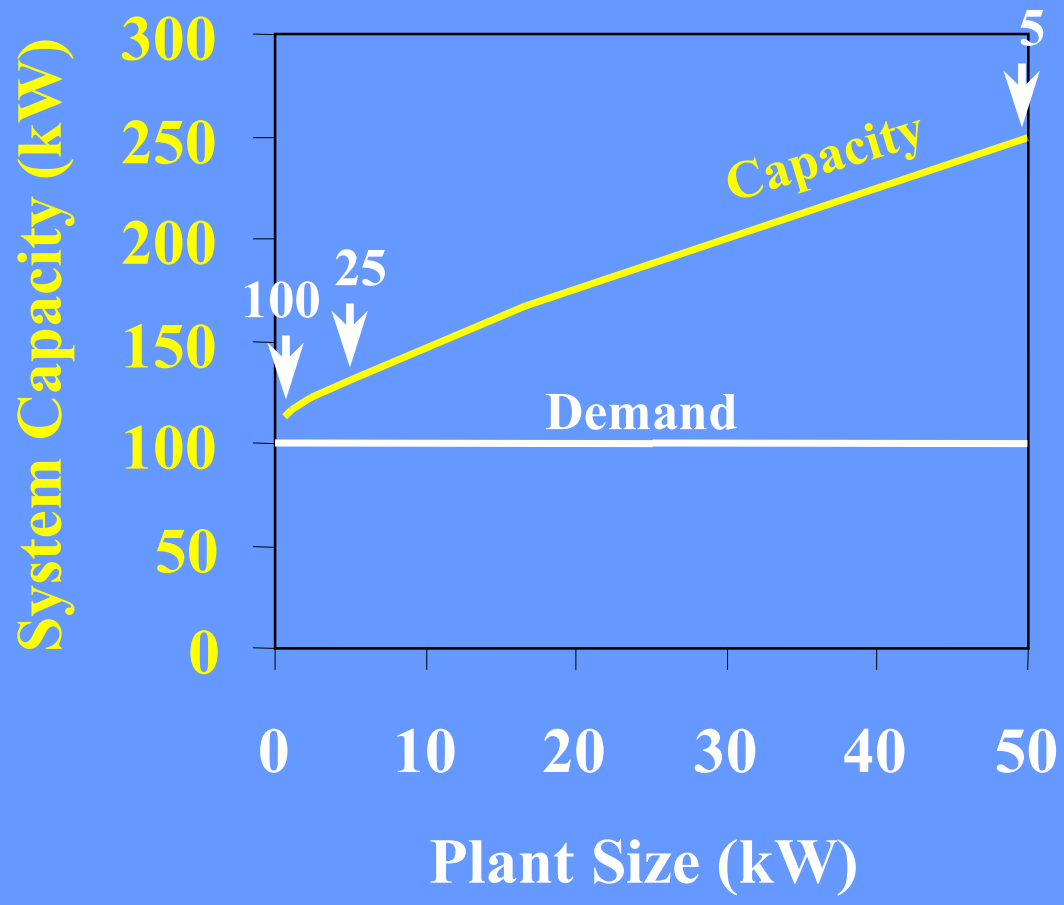
System Capacity Increases w/ Plant Size



The required system capacity is the result of a binomial probability evaluation

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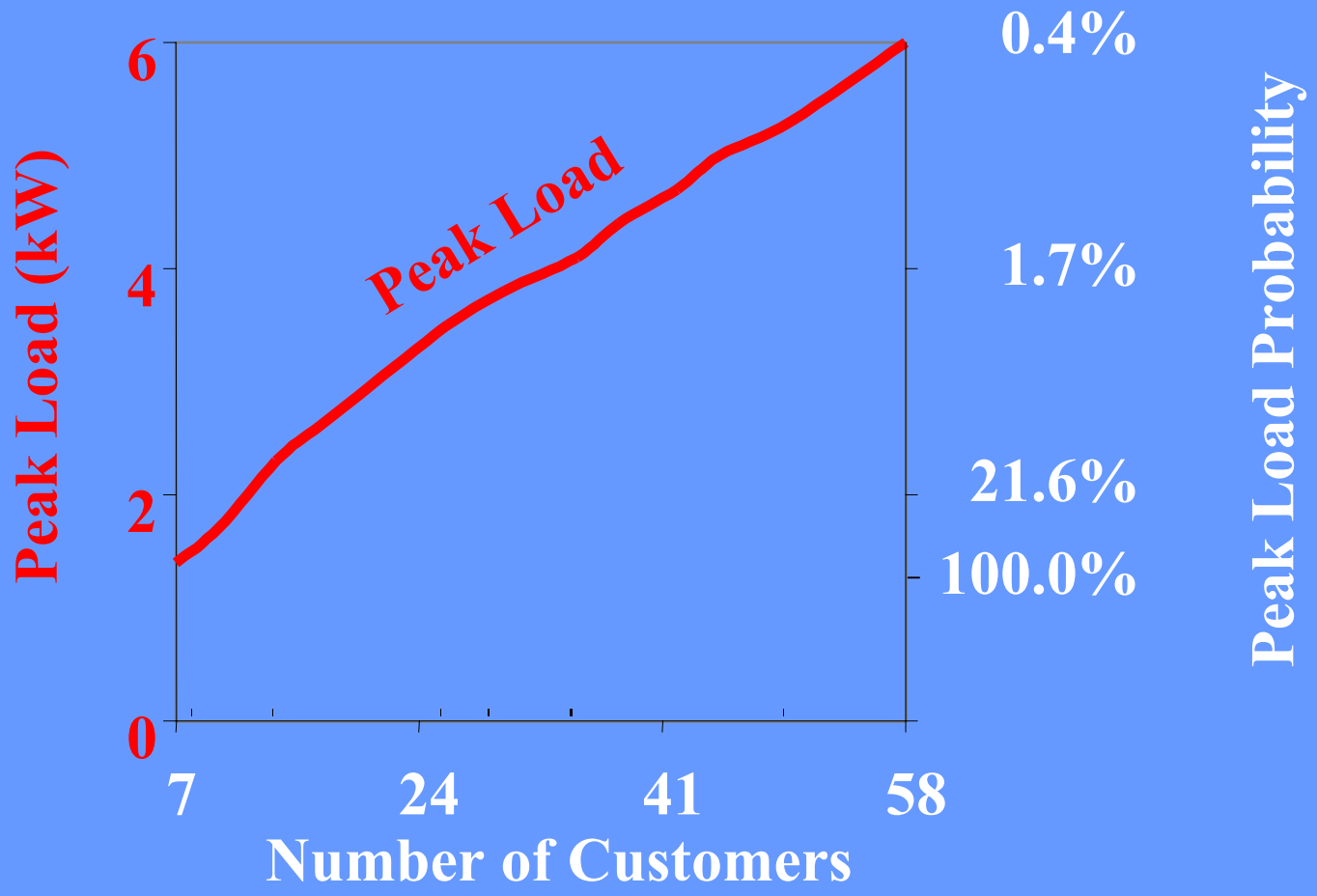
Micro-Grids Can Provide Customers With High Reliability



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Policy Implication: Keep the Door Open for Micro-grids

- They could introduce competition into the T&D system and potentially reduce costs paid by consumers
- They could encourage the use of clean distributed resources; micro-grids could provide an alternative to the T&D utility if their cost of handling system imbalances are excessive

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