

Establishing a Goal for DER: Challenging or Business As Usual

*Paul L. Lemar, Jr.
Vice President
Resource Dynamics Corporation
pll@rdcnet.com*

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DER and the New Energy Marketplace

- Transition to competitive energy marketplace underway
- National concerns over grid reliability and security are well established
- Facilities seeking more control over power supply
- A diverse set of DER solutions emerging

What are Distributed Energy Resources?

- General agreement that DER is close to load, under 50 MW, and most of output used by host facility
- Includes
 - CHP
 - Backup power
 - Niche applications such as premium power, peak shaving, and green power

What's DER, What's not?

- DER included in presentation
 - For non-renewables, units with >10% of generation consumed on-site
 - Includes the following units under 50 MW:
 - Non utility generation (NUGs)
 - Non-hydro renewables
- What is not included
 - Municipal and utility-owned plants
 - Large NUGs (e.g. “Merchant” plants and CHP units)
 - Large renewables

DER Capacity Around 22 GW

1999 Installed DER Capacity

Source	MW (Nameplate)
Photovoltaic	30
Solar Thermal	230
Wind	1,160
Geothermal	930
Agricultural Byproducts	100
Digester Gas	50
Wood/Wood Waste	1,920
Municipal Solid Waste	1,440
Total Renewable DER	5,860
Black and Red Liquor	2,760
Other DR*	13,220
Total Other DER	15,980
Total DER	21,840

Source: EIA form 861, 1999.

*Other DER covers all fossil-fueled units, primarily natural gas, and includes facilities with >10% of generation consumed onsite.

Other Data Points:

Gas Technology Institute (GTI) has 1998 DG capacity (generally under 25 MW) at 28 GW, of which 18 GW is backup units and 10GW is other DG.

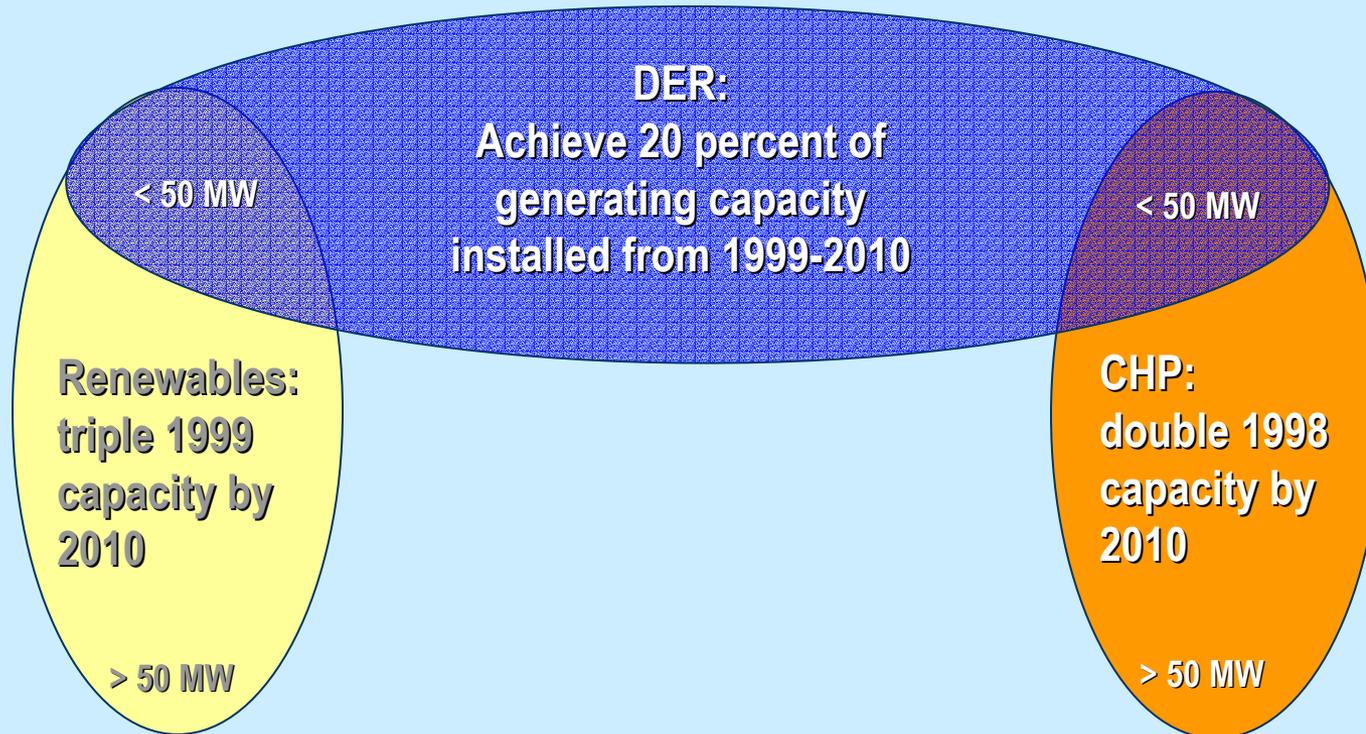
Edison Electric Institute (EEI) data from 1997 indicates DG capacity around 10.8 GW for units under 25 MW, and 21.5 GW for units up to 50 MW.

1999 installed DER capacity is estimated at 22 GW without backup units, which add about 18 GW.

What Are the DOE/OPT Goals

- Enhance the use of renewable energy, triple the installed capacity of non-hydroelectric renewables for 2010,
- Enable DER to achieve 20 percent of new generation capacity by 2010, and
- Maintain the present high reliability of the nation's electricity system.

Sorting Out the Goals



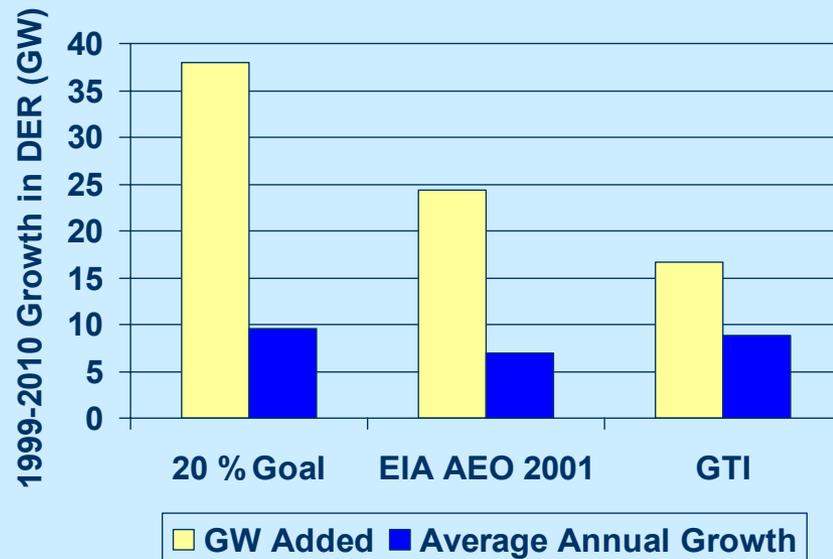
EIA Forecast of Capacity Needs

- 190 GW of new capacity needed by 2010, according to EIA 2001 Annual Energy Outlook
- Implicit in forecast is 16 GW of new distributed generation and non-renewable cogeneration, and 8.3 GW of new renewables (13 percent of new capacity additions), total 24.3 GW

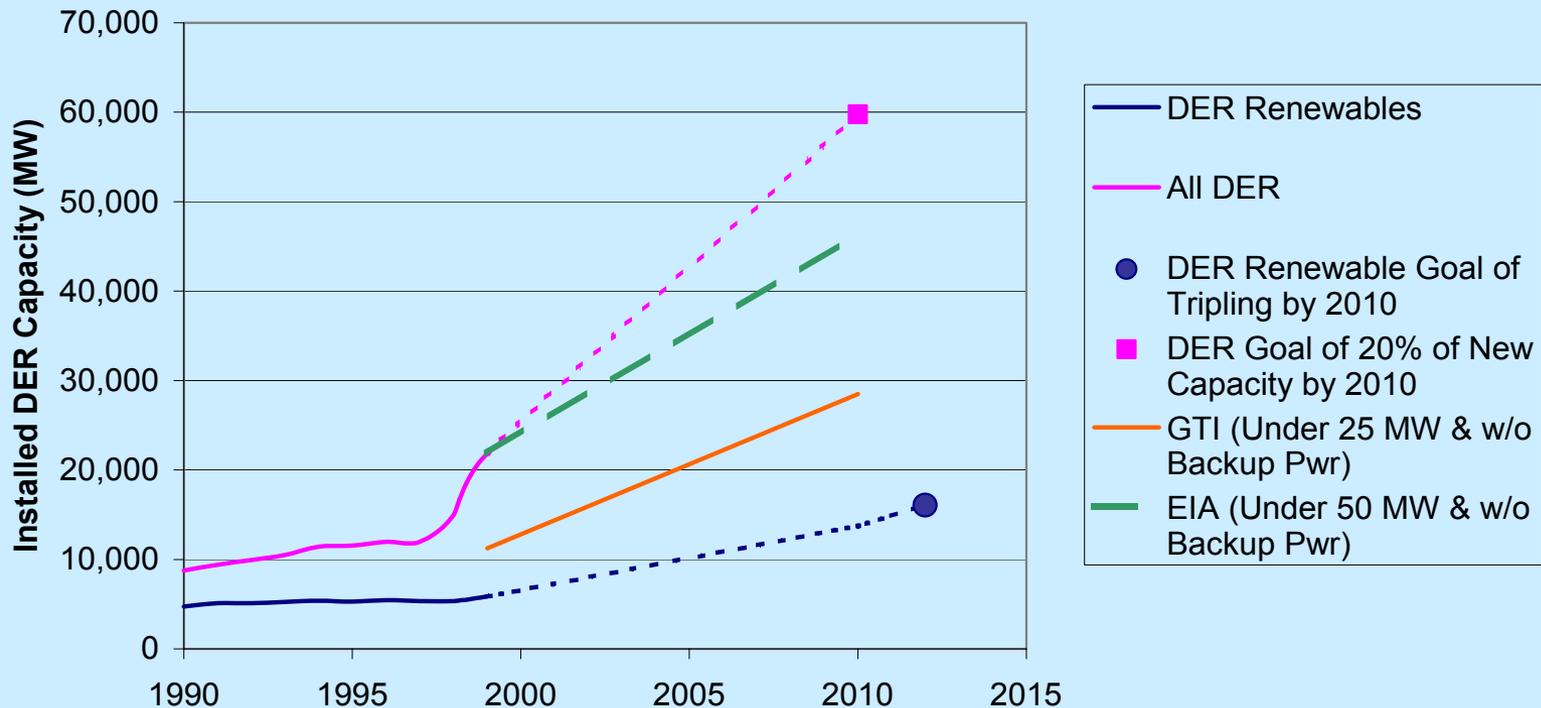
EIA/AEO 2001 Case	1999 GW	2010 GW	Pct. Annual Growth
Reference	745	934	2

How does the DER goal stack up?

- 20 percent goal means 38 GW of new DER capacity by 2010, an average annual growth rate of 9.6 %
- EIA's forecast of 24.3 GW equates to 7% annual growth over and above the 21.8 GW estimated 1999 capacity
- GTI forecasts (under 25 GW) 18 GW from 1998-2010, averaging 8.9 % annual growth
- Backup power not included, but still an important component of DER Program



Current DER and DOE Goals



Achieving DER Goal

- Is the Goal achievable?
 - Unpublished studies by contractor indicate achievable economic potential of 50-60 GW in industrial and commercial facilities, of which 15-20 GW has paybacks under 4 years
 - With future improvements in DER technology, potential increases to 80-100 GW, with 30-35 GW under 4 year paybacks
 - Adding 10-20 GW to EIA forecast yields 35-45 GW of new DER
 - Is 2010 a realistic target?
- What will it take?
 - Improvements to DER technology
 - Lowering/removal of key market and regulatory barriers
 - Adequate funding