Solar on Every Roof
Renewable Energy Payments
for Florida

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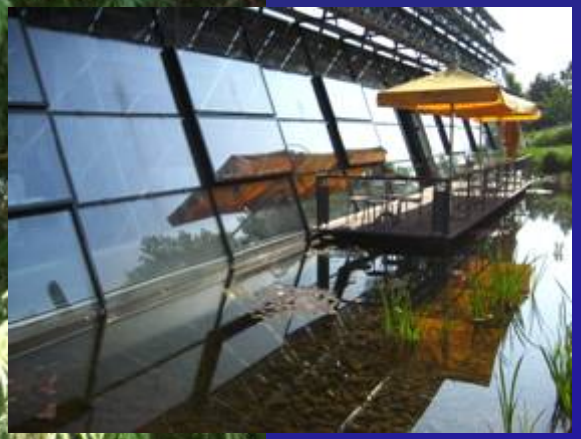
2008

FARE
FLORIDA ALLIANCE FOR RENEWABLE ENERGY

LET SUNSHINE POWER THE SUNSHINE STATE

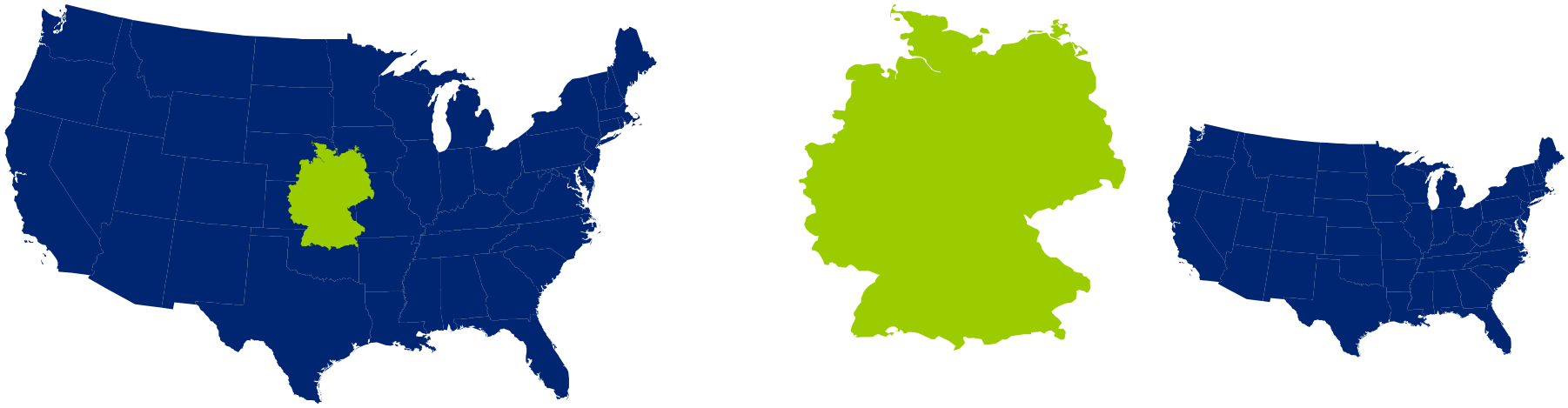
Solar Factory



Large Roof PV System

Jobs and Opportunity

Renewables - US Is Left in the Dust…



Landmass vs. Wind energy (MW) in Germany and Continental United States (2007)

Area

Germany:	357,030 km²
US*:	8,154,157 km²

*23 times larger, without Alaska

Installed Capacity

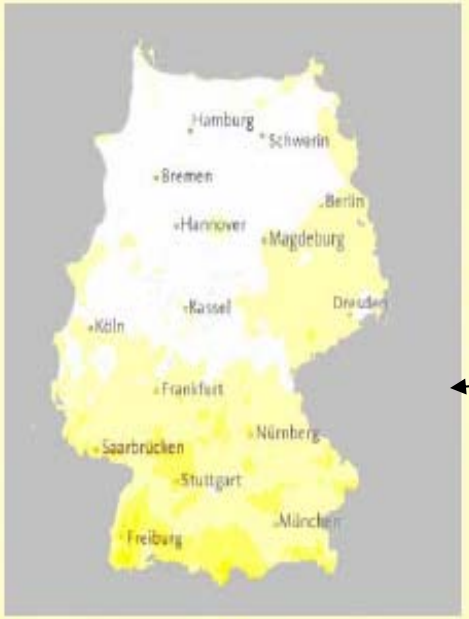
Germany*:	22,247 MW
US:	16,818 MW

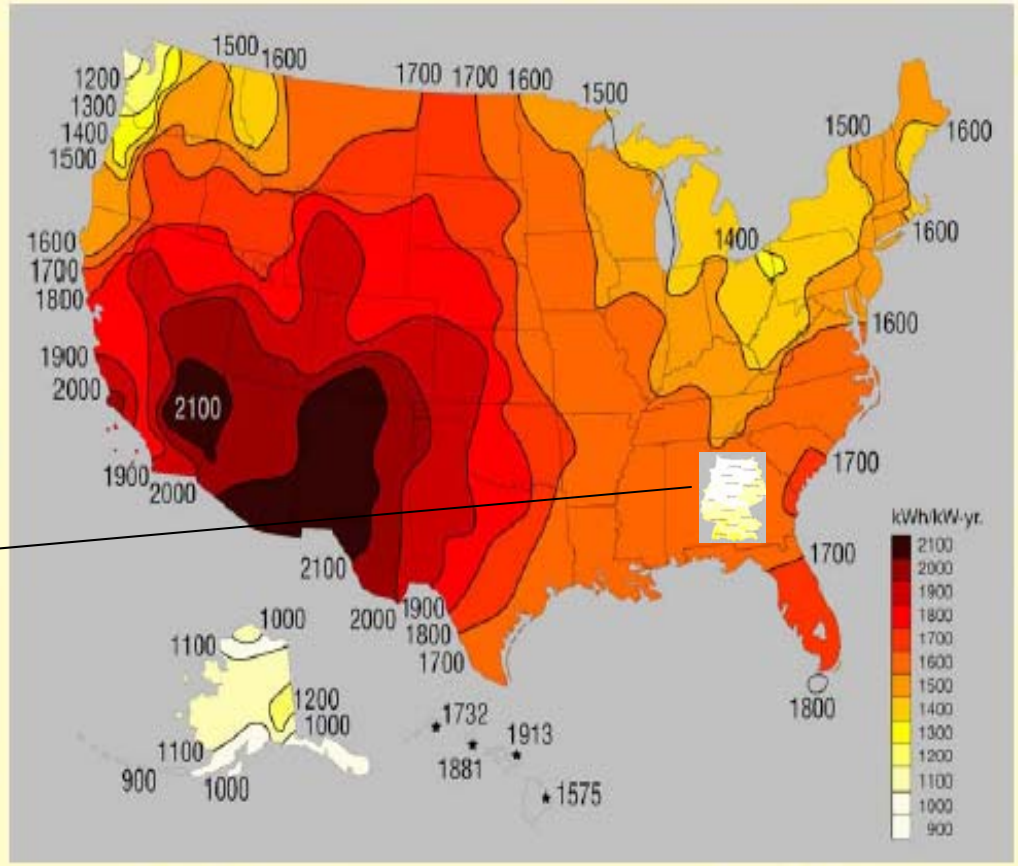
*1.3 times larger

Map credit: Ryan Perroy, University of California, Santa Barbara

Germany Comparable to Alaska…

Relative solar intensity kwhr/ m^2





Florida Sunshine Resource 2X Today's Largest Market - Germany

Florida's Energy Issues

- Florida requires 0.5-1GW annually of new capacity (1-2 fossil)
- Over-reliant on fossil fuels; imported Gas > 50% power
  - $50+ oil - (IEA - $200 by 2030) FL's long term electricity costs?
  - Utility rate increases of 25%
- Coal not an option
- Nuclear ? 10 yrs w/out opposition at $10-41 p/m
- Renewables - Speed
  - Currently < 2% of power generation mix
  - Limited hydro, more wind, some biomass
  - Solar – the Sunshine State

Renewables – Why Bother?

- **Energy Security**
  - Reduce dependency – save $700BN on imports; Pickens Plan
  - Conventional energy costs trebled; more to come
  - Russia/Georgia, Gazprom, Chavez, Iran

- **Wealth Creation - Jobs**
  - Higher local ownership; beneficial impact on local economy
  - Germany employs 250,000 – forecasting 500,000; “Export Machine”
  - Germany – 2006 - Net benefit $9BN per annum

- **Environmental Benefits**
  - Hydro, wind, solar minimal CO2
  - Fuel is free & reliable

Business Perspective – The Opportunity

- VC investment in clean energy - $117 BN + 35% 2007 (NEF)
- Solar is a $ 30 billion industry – $120BN sales by 2011 - 50% CAGR
  - ~$100BN stock market valuation for solar
- US solar producers largely for export; overseas cannot get enough
- US / Florida solar initiatives deeply flawed; deterring investment
- RPS unattainable under BAS (Ask CA Energy Commission)
- Florida is missing massive solar investment opportunity:
  - $5BN sales - export industry
  - Employing 25-50,000 people; Construction/Manufacturing, High tech R&D

Florida has < 2MW of solar. Germany will install ~1.5 Gigawatts/2008 $8BN – 75% CAGR

What are Feed in Tariffs / REPs?

Renewable Energy Payments

- Simple, transparent – available to all
- Priority access to the grid for all renewable producers
- Long term standard offer contracts; fixed price guaranteed
  - 20 years
- Cost + reasonable profit (tba by PSC)
  - Price Differentiation by size, technology
- Price degression
  - Germany 9-10% fall
  - Spain 30%

Renewables - Issues ► Solution

- Utilities finance fossil fuel under 20 yr rate base
  - Guaranteed – cost pass through
- Renewables require same treatment; private sector will finance
- **Solution:**
  - A Florida Renewable Energy Freedom Act
  - Covers all renewables; solar likely to be most productive
  - RE priority access to grid, 20 yr contracts, differentiated pricing,
  - **We need every school, church, farmer, household and real estate developer to become entrepreneurs & sell back power & so drive us to a more secure clean electricity future**
- FACT – happening now throughout Europe; growing in US
- Florida Legislature should prioritize immediately

REP Policies

- Deliver More Capacity--
  - --More Quickly
  - --More Equitably
- By Enabling Participation
  - --Everyone

- 18 EU Countries use Electricity Feed Laws
  - 46 Countries world wide
  - 2008 additions: UK, Switzerland, Ukraine, India
  - US – Hawaii, OR, CA, IL, MI, MN, RI, LADWP, City of Gainsville

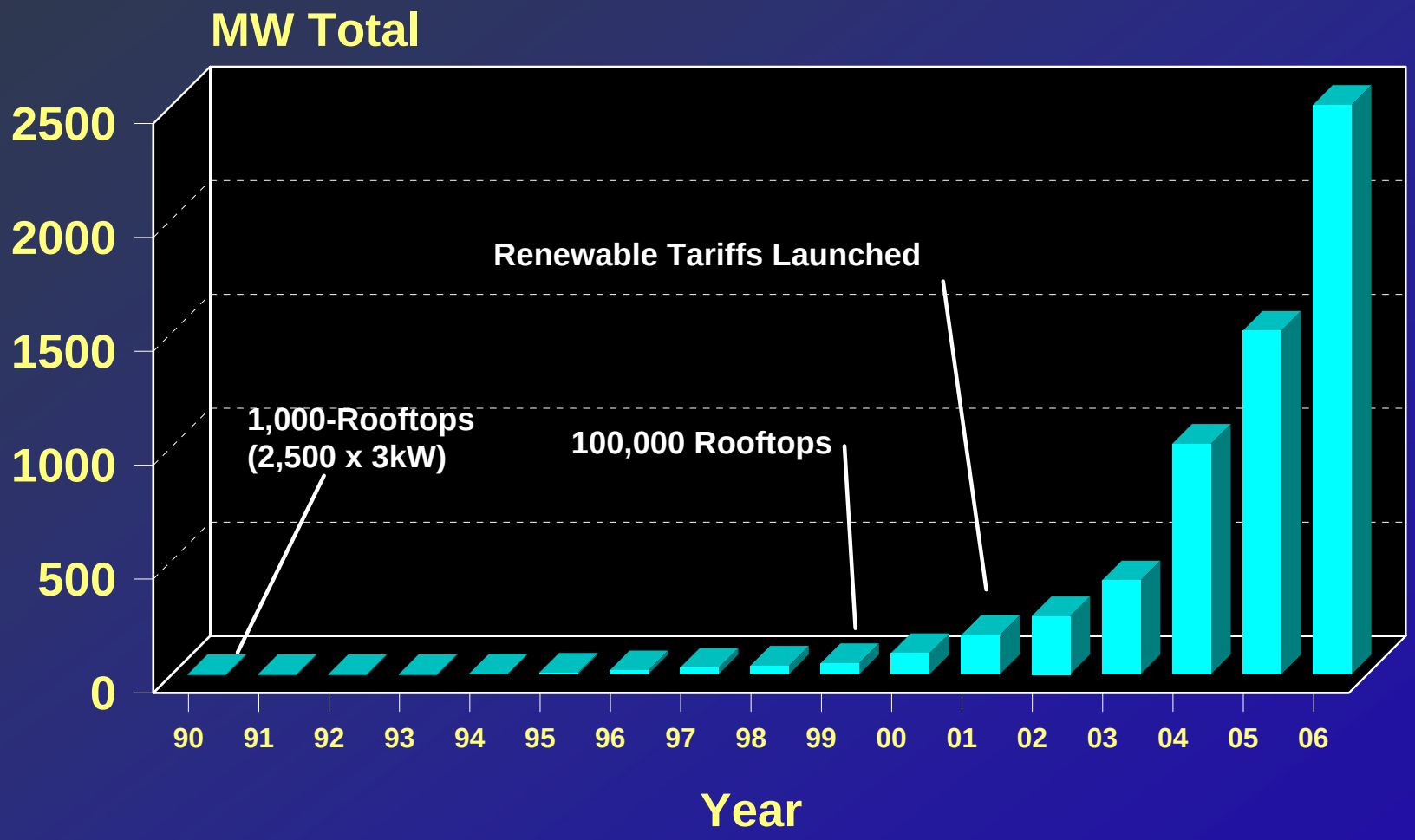
Paul Gipe, wind-works.org

2008 IEPR Recommendations for Feed-in Tariffs

1. The CPUC should immediately implement a feed-in tariff program for all RPS-eligible generating facilities up to 20 MW in size. Such a program should include must-take provisions as well as cost-based technology-specific prices that generally decline over time and are not linked to the CPUC's market price referent.

2. The Energy Commission and CPUC should continue to evaluate feed-in tariffs for renewable projects larger than 20 MW using the information in the Energy Commission's report on feed-in tariffs expected to be completed in early 2009.

Feed In Policies & Solar Photovoltaics in Germany



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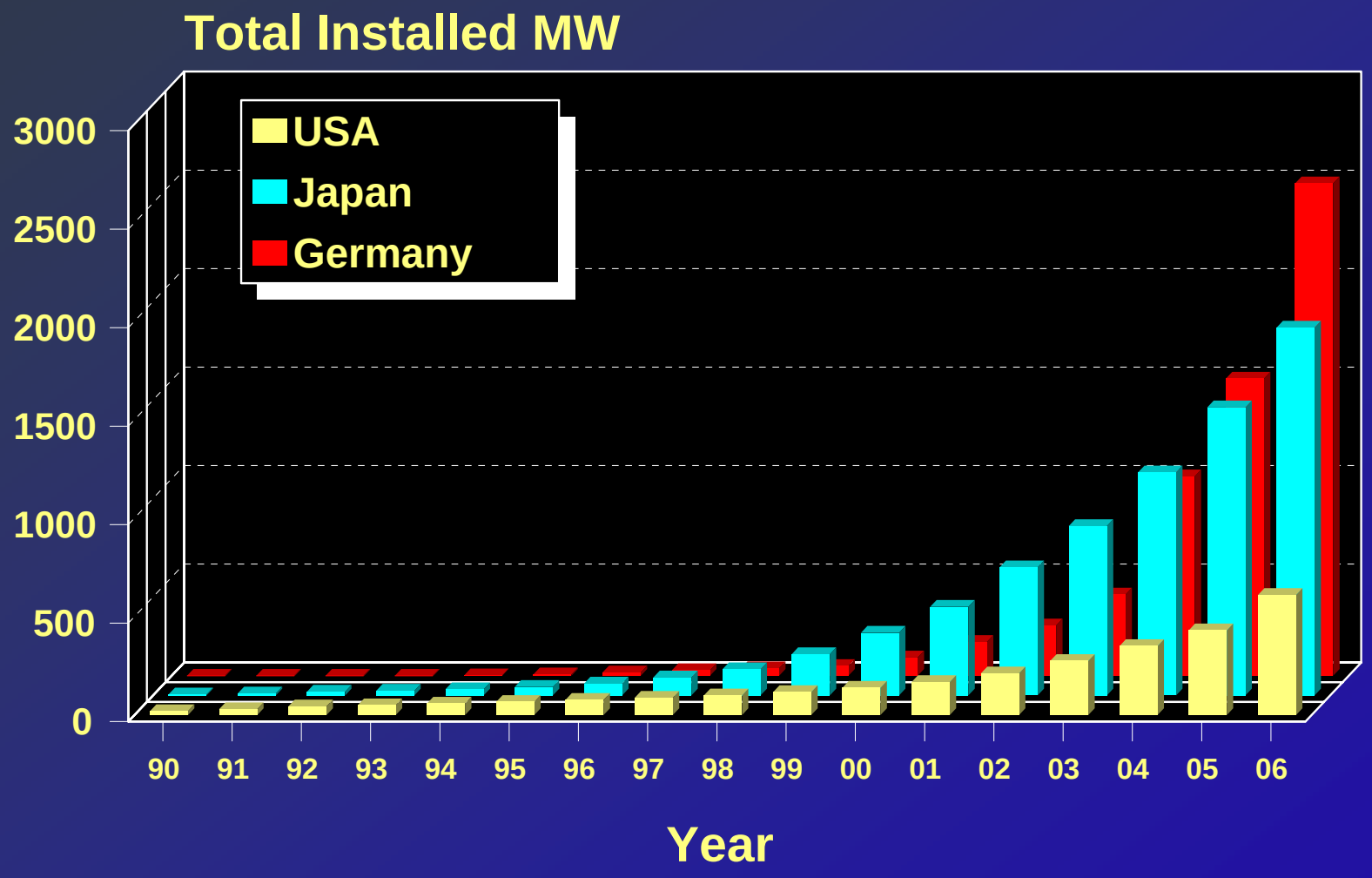
Solar Photovoltaic Development



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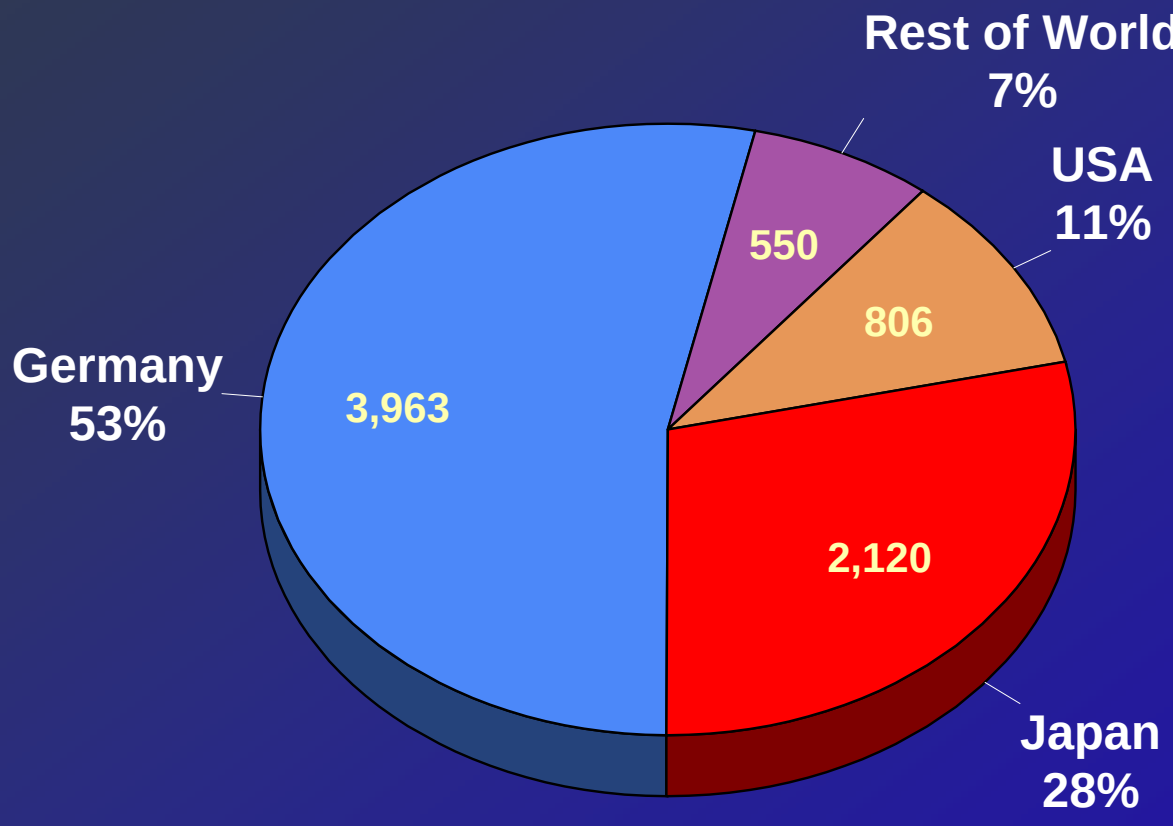
World PV Capacity 2007
~8,000 MW



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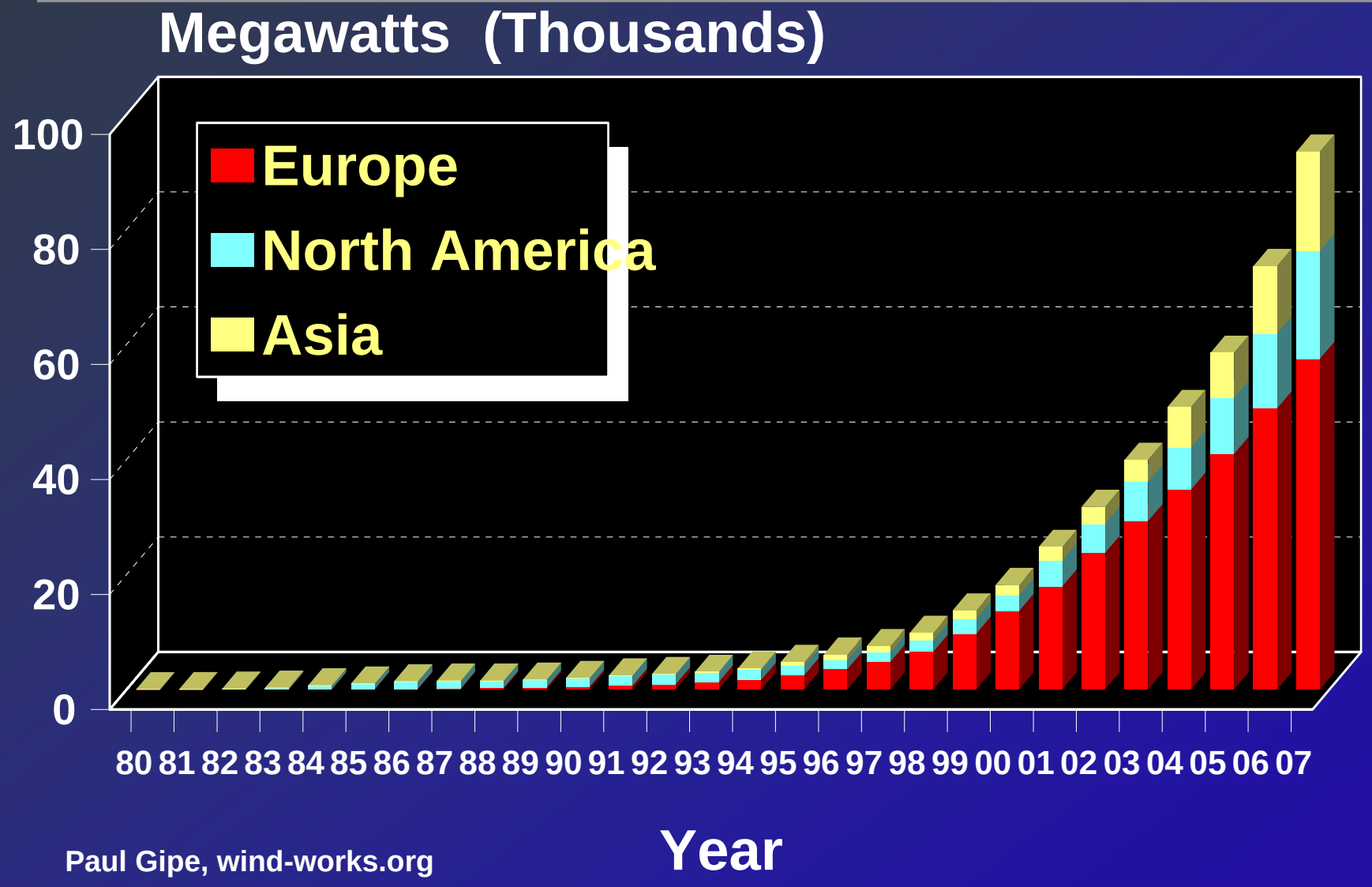
World Wind Generating Capacity



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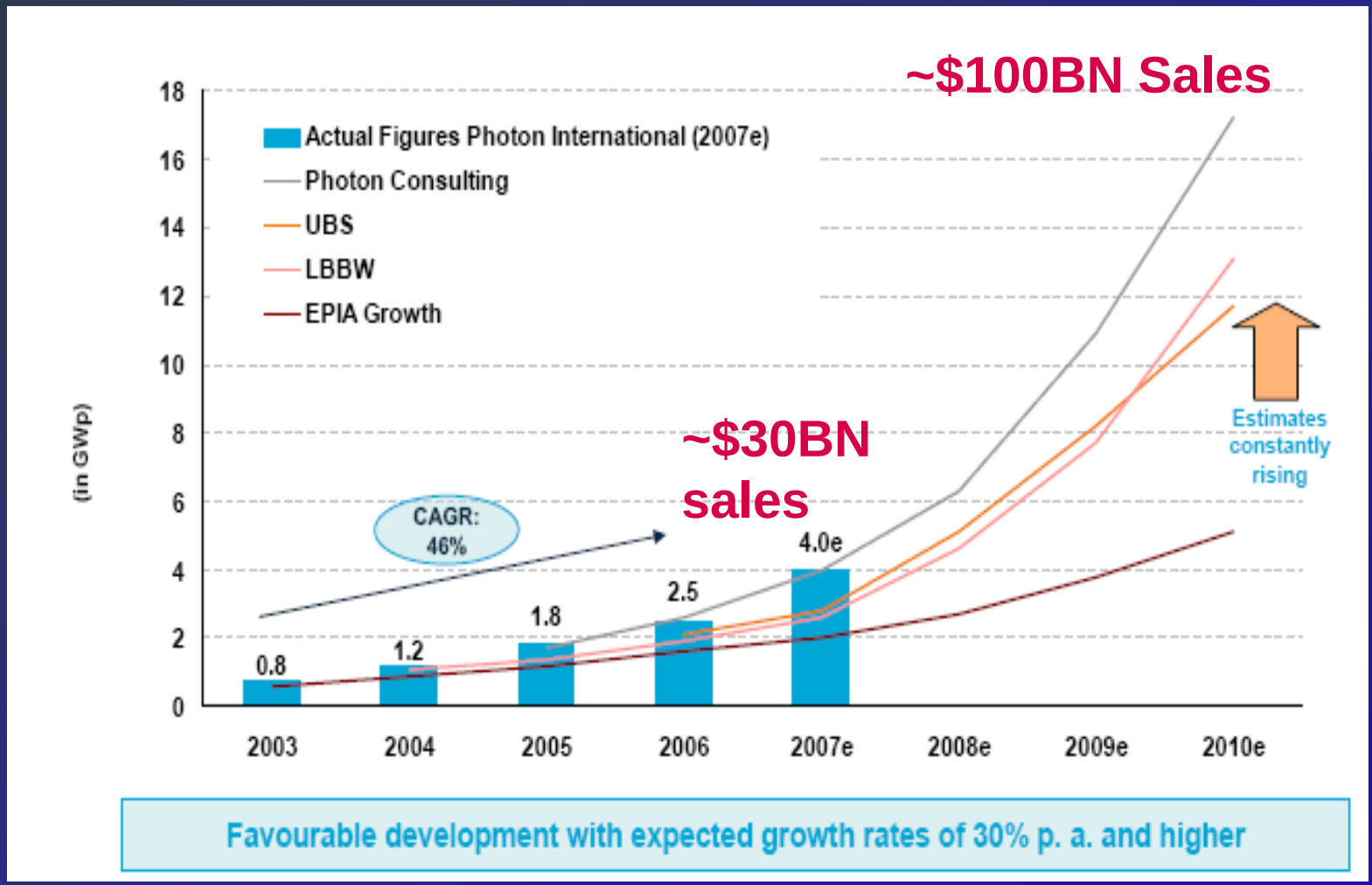
Solar – "Danke" Germany & Feed In Policies

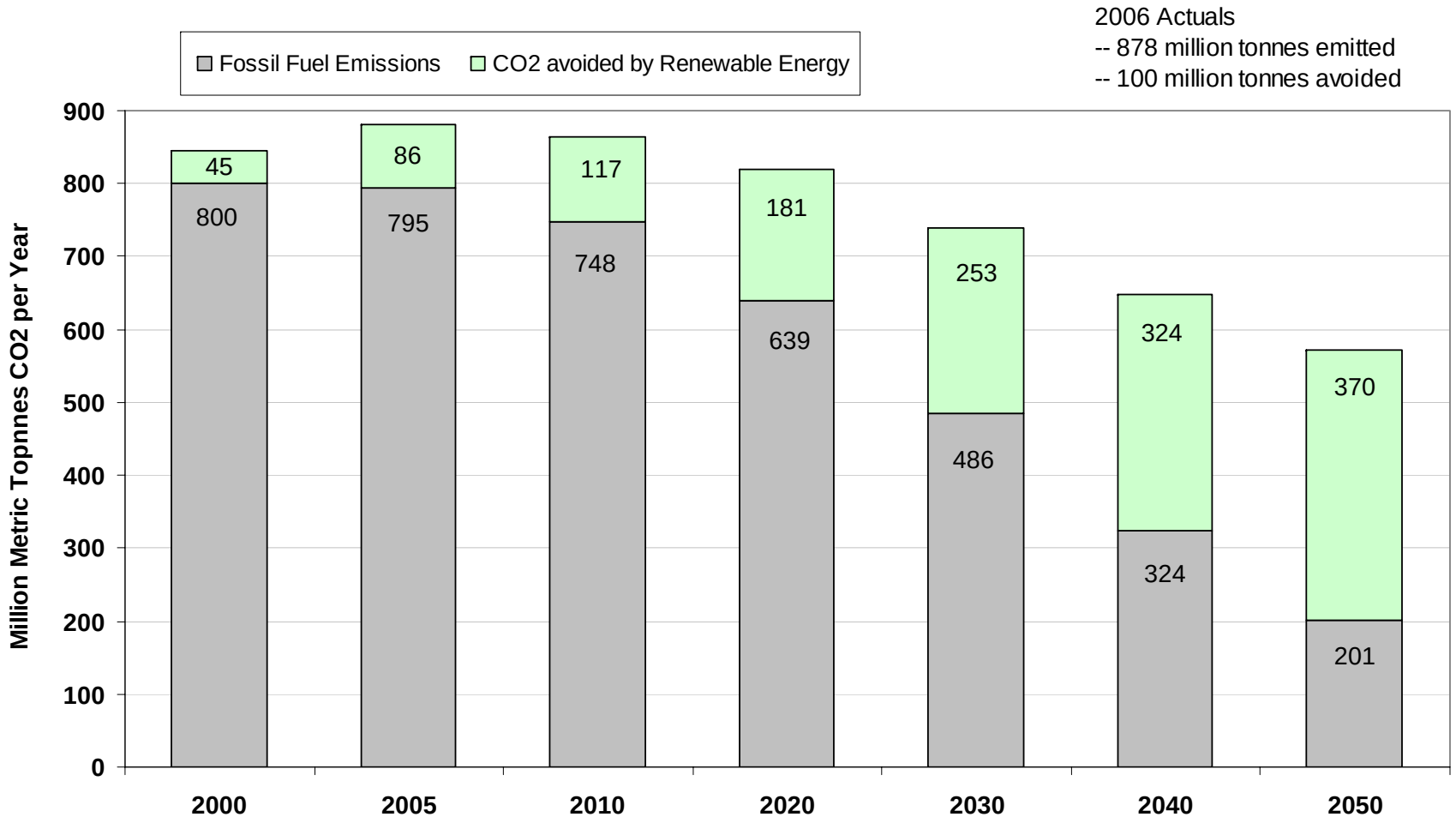
Source: Ökoinvest & Solar Verlag 5 Jan 2008, PPVX comprises of 30 PV companies (sales in PV > 50%)

Photon EXPO

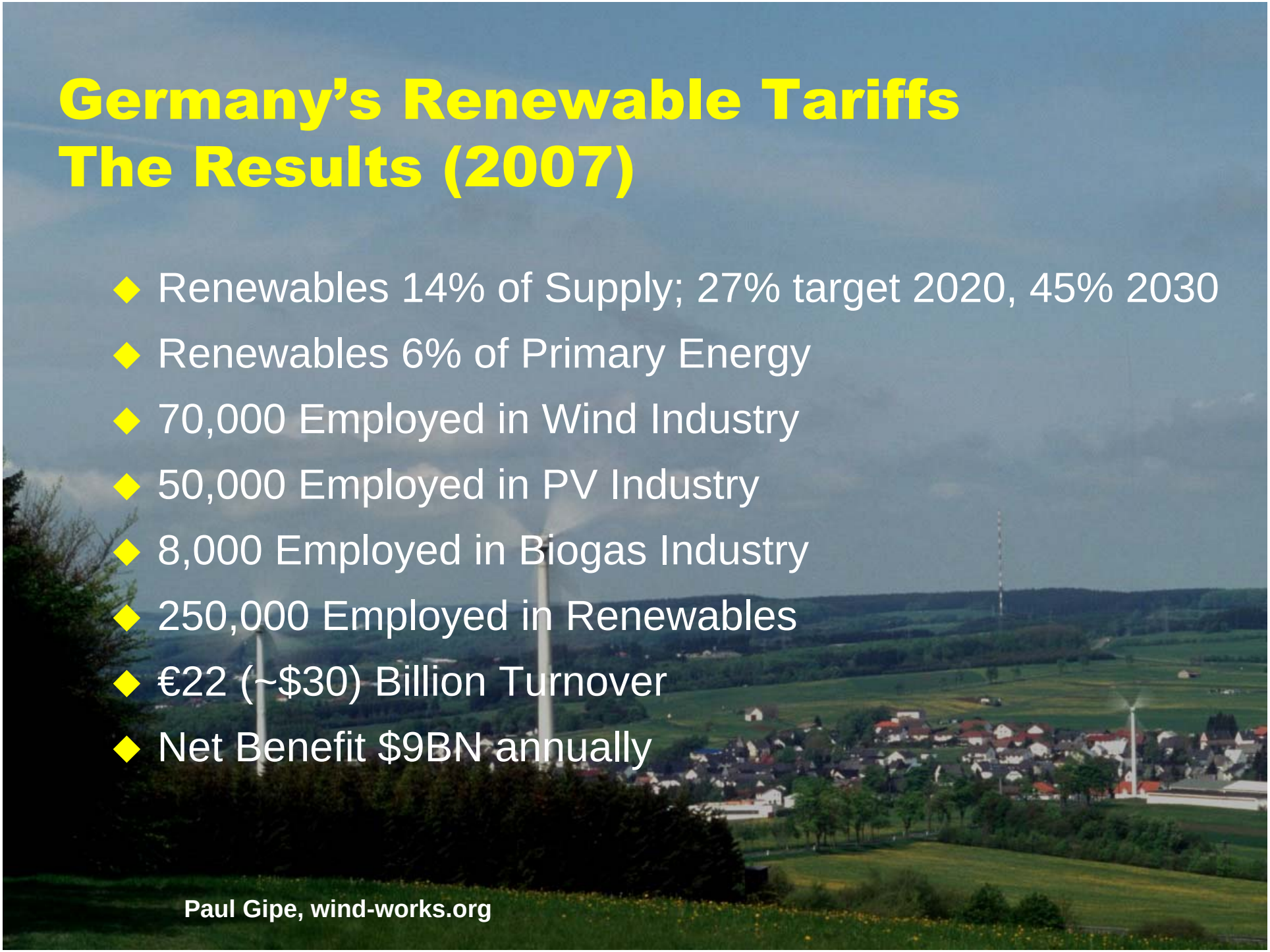
Strong Global Solar PV Market Growth



GERMANY'S CO_2 EMISSION TARGETS
(Set by European Union)



SOURCE: German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety



Germany's Renewable Tariffs
The Results (2007)

- Renewables 14% of Supply; 27% target 2020, 45% 2030
- Renewables 6% of Primary Energy
- 70,000 Employed in Wind Industry
- 50,000 Employed in PV Industry
- 8,000 Employed in Biogas Industry
- 250,000 Employed in Renewables
- €22 (~$30) Billion Turnover
- Net Benefit $9BN annually

Paul Gipe, wind-works.org

Florida Renewables Objectives

- To create a high tech solar industry; broader renewables industry
- 1000MW of solar by 2011 – 5GW by 2017?
- Other renewables – 1GW+
- Balanced – Residential + larger 1-50MW farms
- Economic Impact
  - Germany - 50,000 employed in solar ; higher paying
  - Revenue for farmers; construction employment
  - Manufacturing modules - 100MW production = $200MM Capex investment, employing 100 people
  - High tech R&D / Clean energy – a “Solar Silicon Alley”
- How ? What’s needed for large-scale solar to develop?

What's Required?

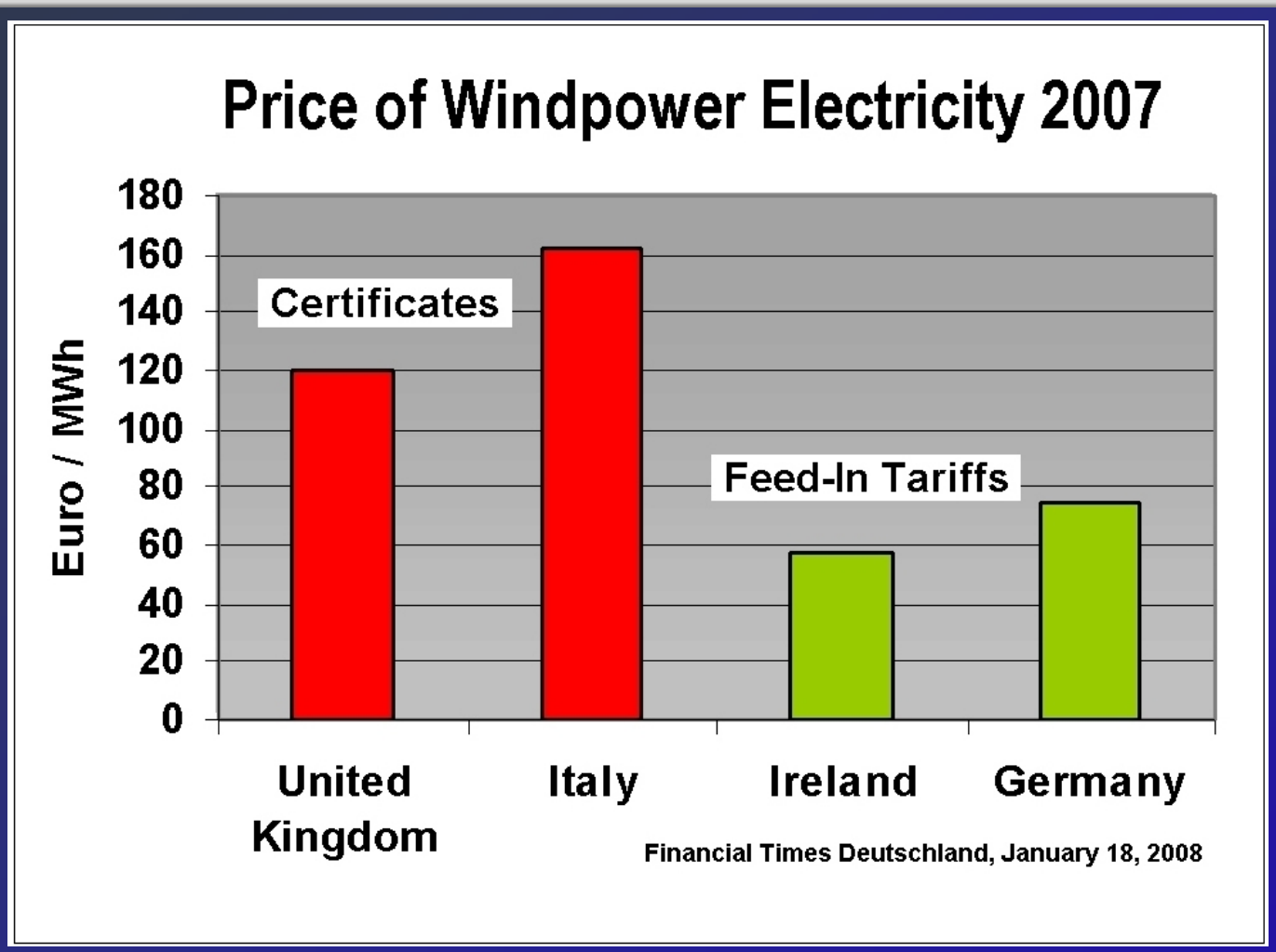
- Adequate insolation/wind (incoming solar radiation) √
  - Sunshine State very high; 85% of max.
- Long-term fixed pricing/same as utilities X
  - Payment/Recovery mechanism
  - Renewables priority grid access
- Available/affordable land near demand √
  - ~10,000 acres per 1000MW
- Simple siting and permitting process X
  - Statewide CEO of Renewables
- Entrepreneurs/Developers √
  - State must allow new entrants

Florida PSC Heading Down Wrong Path

- PSC strawman draft rule proposed:
  - 20% by 2041
  - Hourly Tradable SRECs
- Tradable RECs - No investment security
- Florida - regulated energy monopoly - why renewables?
- Tradable RECs encourage monopolies; Maryland, NJ
- Tradable RECs are more expensive (Ernst & Young, IEA, Summit Blue)
  - **Germany 4x more RE generated @ 1/5 relative cost of UK RECs**

RECs Highest Ratepayer Cost – Least Effect

REPS Are Lower Risk – Deliver Lower Cost Power



A Trading System

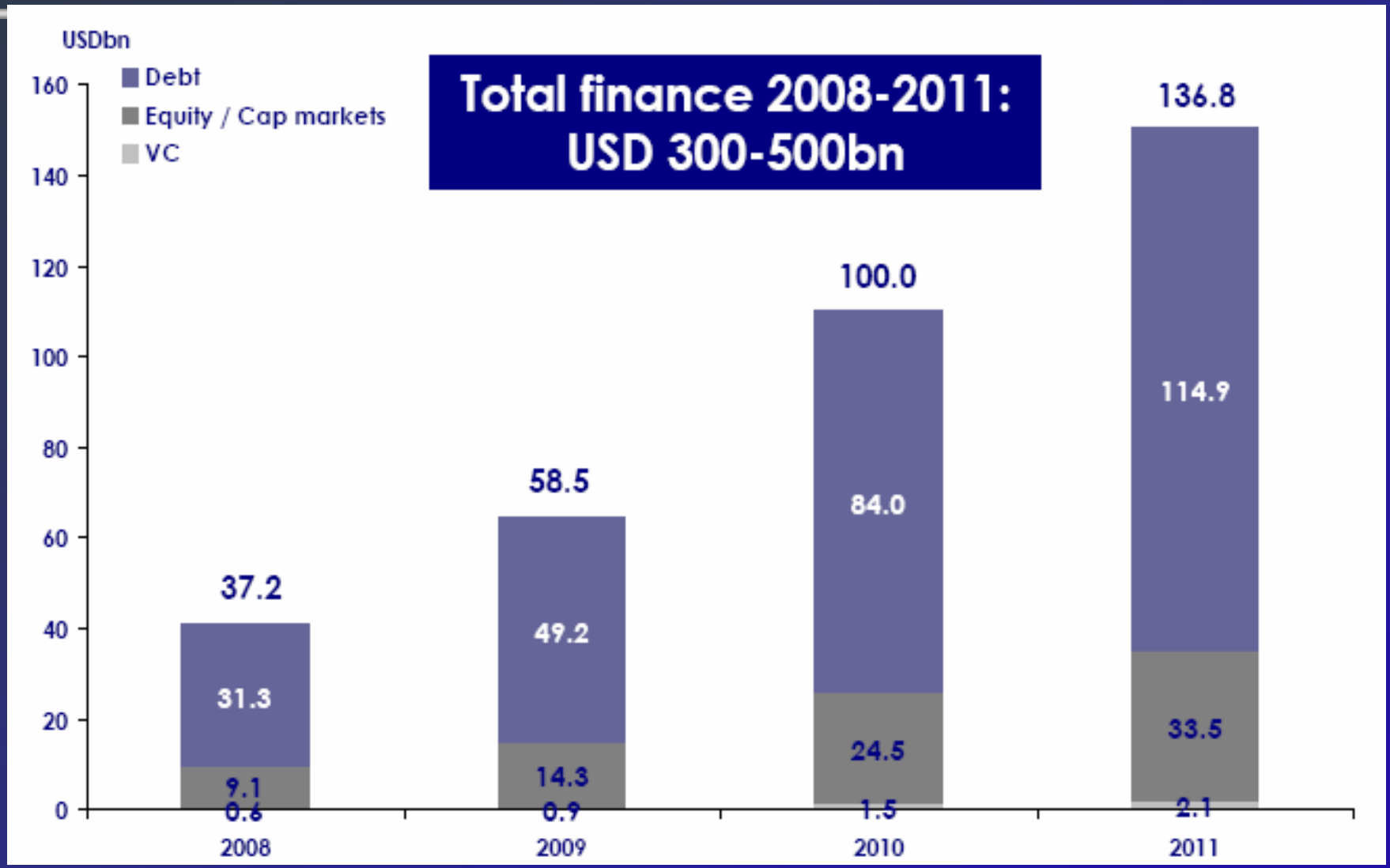
SRECs – Not A "Trading" System

Problems With Tradable SRECs

- NYSE – Billions of trades; huge liquidity; millions of counterparties
- Tradable SRECs – Maryland
  - Mimimal counterparties; Constellation, SunEdison
  - No liquidity
  - Few trades other than via SunEdison
  - A “Monopoly”

TRADABLE SRECS GIVE NO INVESTMENT SECURITY

PV Financing Requirements: Who Lends?



Source: Good Energies

Gainsville Regional Utility

- City of Gainsville utility is 5th largest municipal utility in Florida; 89,000 retail and wholesale customers
- Thought leader in Florida; proposed a Solar FIT/REP
- Seeking implementation 1/1/2009
- Identified Problems w/ existing renewable program
  - Solar rebates don't reward performance
  - Net metering
    - Cannot accommodate 3rd party investors
    - Doesn't allow investor to capture future value
    - Ownership; triple net leases; most businesses cannot benefit

Recommendations

- German style FIT/REP
- Tariff at 21-31c net; ~ 35c gross with ITC; higher for business'
- 20 year guaranteed fixed price
- 5% degression on pricing
- Automatic access; no caps; all rate categories eligible
- Discontinue GRU rebates, state subsidies and net metering

Return Comparison

Table E-1
Effects of Proposed Feed in Tariff
on Owner's Financial Return
From an Average Priced PV System

Rate Class	Scenario	
	Current Rebate and Net Metering Program[a]	Proposed Solar Feed in Tariff
First Year ROI (%/Year)		
Residential	6.67	11.56
Gen. Serv. Non-Demand	7.46	11.56
Gen. Service-Demand	5.09	11.56
Large Power	5.03	11.56
IRR Results (%)		
Residential	2.29	6.43
Gen. Serv. Non-Demand	4.73	6.43
Gen. Service-Demand	-0.64	6.43
Large Power	-0.79	6.43

a. Assumes 100% of the local and state taxes associated with purchasing electricity are included in this scenario. This benefit does not accrue under the FIT scenario.

Pricing

Rate Schedule for PV Energy
($/KWh Delivered)

If PV System is Installed in Calendar Year...	Solar FIT Shall be…	And Applied Uniformly From the Date of installation through Dec. 31,
2009	0.260	2029
2010	0.247	2030
2011	0.234	2031
2012	0.223	2032
2013	0.212	2033
2014	0.201	2034
2015	0.191	2035
	Grid Parity	

GRU Conclusions

- US a relative renewable laggard
  - net metering, SRECs insufficient or counterproductive
- Policy first – market, jobs/industry will follow
- Local, Regional and National
- Implement “Gainsville” style REP at state/federal level
  - Policy tool to achieve RPS targets – SO contracts
- Grassroots - Municipalities; Counties – have them force initiative with IOUs
- Engender competition among green cities/politicians

What Can You Do?

- Ask your legislators to support REP “Freedom” Act
- Require PSC to have workshops on REP/feed in tariff alternatives
- Focus on:
  - jobs/wealth creation
  - Energy independence
- Renewables are an investment in FL energy future
- Thanks Mike!
  - Governor’s Action Team recommends REPs
- Work w/ beneficiaries to sponsor legislation
  - Farmers
  - Local Construction/Building industry
  - High tech
  - Regional financial community

Who Is Advocating REPs?

www.Allianceforrenewableenergy.org

www.FAREnergy.org

Contact: jburges@FAREnergy.org