

Feed-In Tariffs Worldwide

- 35 countries or states
- Guaranteed access to the grid
- Tariffs based on cost of generation, investment
- Tariffs differentiated by technology type, size, and application
- 10-25 year contracts
- FITs have enabled 75% of global PV, 45% of global wind power



Feed-In Tariffs in BC - The Paradox

**BC already produces average 95% renewable electricity
= 54,000 GWh/year**

**The last Clean Power Call received 17,000 GWh in offers, and
BC Hydro issued contracts for 3,000 GWh at 12 cents/kWh**

**The concern: a successful FIT in BC would produce surplus
electricity which would have to be exported at a lower price.**



Bear Mountain Wind Park, Dawson Creek

Ontario's Feed-In Tariff



In 2010 - offers for 9,265 MW

Signed contracts for 2533 MW = 5,500 GWh/yr

Cost \$10 billion

BC's Proposed Feed-In Tariff

Specifically NOT to act as a general power procurement tool

Six Objectives:

- 1. To foster innovative technologies that support conservation, efficiency, and clean renewable energy**
- 2. To ensure that BC Hydro rates remain low**
- 3. To reduce GHG emissions**
- 4. To encourage economic development and job creation**
- 5. To foster renewable energy in First Nations and non-integrated rural communities (getting off diesel)**
- 6. To reduce waste**

BC's Proposed Feed-In Tariff

- **\$25 million pa annual budget above cost of acquiring the same power through the Standard Offer Program**
- **Aiming to produce a 5-10% return on investments**
- **5 year contracts**
- **5 MW project limit**
- **“First come, first served” intake process**
- **Biomass - Biogas - Geothermal - Ocean Energy - Hydro instream**
- **No solar or wind except in non-integrated areas and First Nations**
- **Cost covered by ratepayers, taxpayers, or both**

BCSEA Recommendations

1. Annual Budget \$50 Million

- **Would stimulate 250 GWh a year = 2.5% of last Clean Power Call, 0.23% of BC Hydro's annual power production**
- **Will not create excess power for export**
- **Build up over ten years**
- **Each year: \$5 million for new projects**
- **By Year Ten, cost = \$50 million/year**
- **Household cost in Year One: 8.4 cents/month**
- **Household cost by Year Ten = \$0.84 cents/month**

BCSEA Recommendations

2. Payment on BC Hydro Utility Rates

- **Standard FIT approach around the world**
- **Reliable, not vulnerable to politics**
- **Integrated into BC Hydro's planning**

BCSEA Recommendations

3. 20-year contracts, not 5 years

The need for investors' return of 5-10% will require a much higher tariff price/kWh if tariff is for 5 years, not 20.

BCSEA Recommendations

4: The 5 MW Limit

May not be suitable for Geothermal and Ocean Energy

May be also inappropriate for Biomass



BCSEA Recommendations

5. Changed Intake Process

Technology allocations, not 'first come first served':

Geothermal	\$xx million
Ocean	\$xx million
Solar	\$xx million
Biomass	\$xx million
Biogas	\$xx million
Hydrokinetic + other	\$xx million
Renewable Heat	\$xx million
First Nations	\$xx million
Non-Integrated	\$xx million
Total	\$50 million

BCSEA Recommendations

6: Premium for Community-Owned Projects



BCSEA Recommendations

7: Openness and Transparency

In Ontario, the Feed-In Tariff program design
was praised
for the openness and transparency
of the stakeholder engagement process.



BCSEA Recommendations

8: Renewable Heat

Joules = kWh immediate measurement

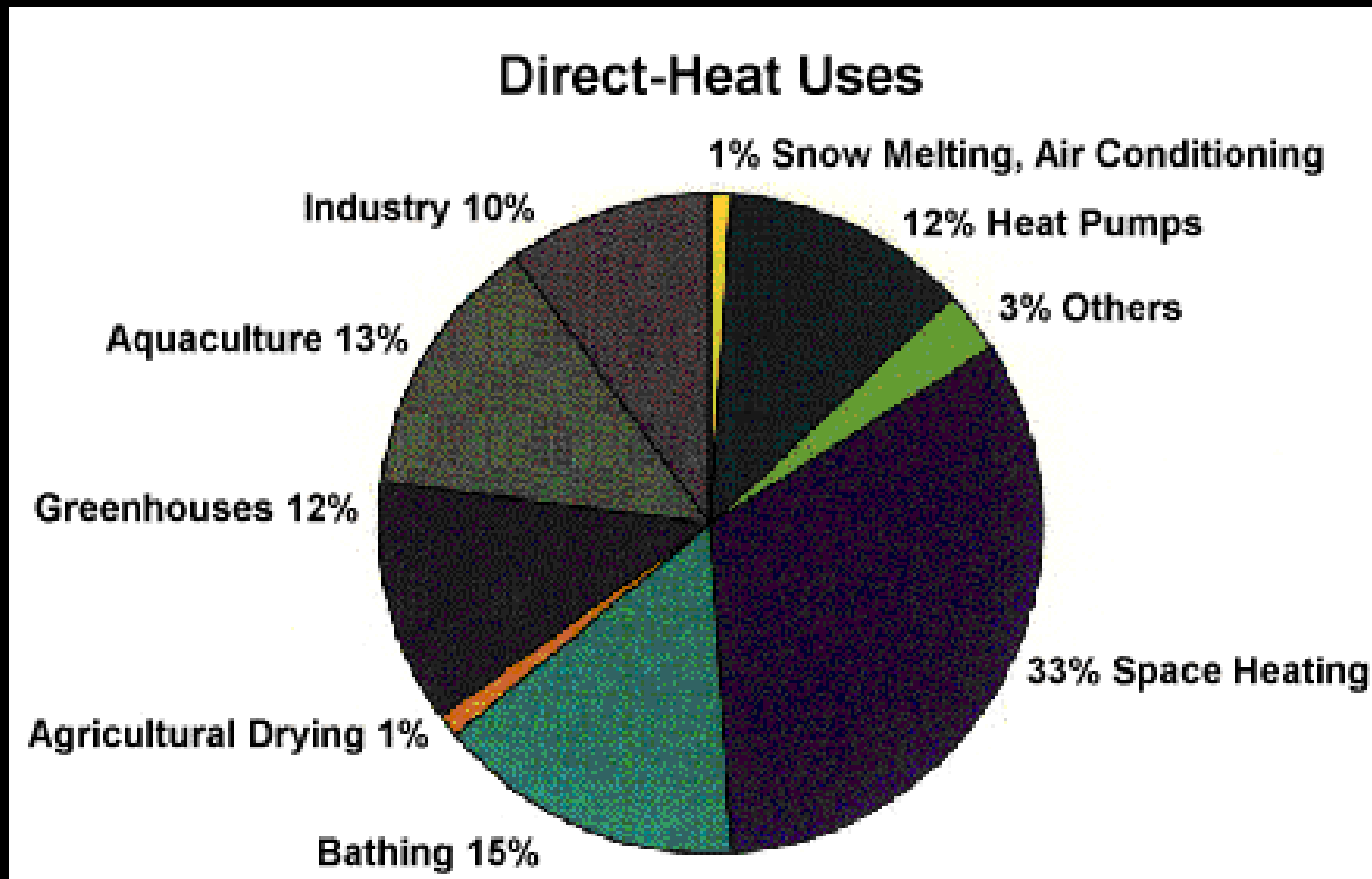
Germany, France, Spain, Switzerland pay renewable heat FIT bonus for cogeneration. Britain is proposing a full renewable heat FIT.

Proposed BC Renewable Heat FIT :

- (a) Cogeneration from biomass and biogas**
- (b) Geothermal direct heat for district heating**
- (c) Biogas**
- (d) Solar thermal heat**
- (e) Super-efficient heat pumps in super-efficient buildings**

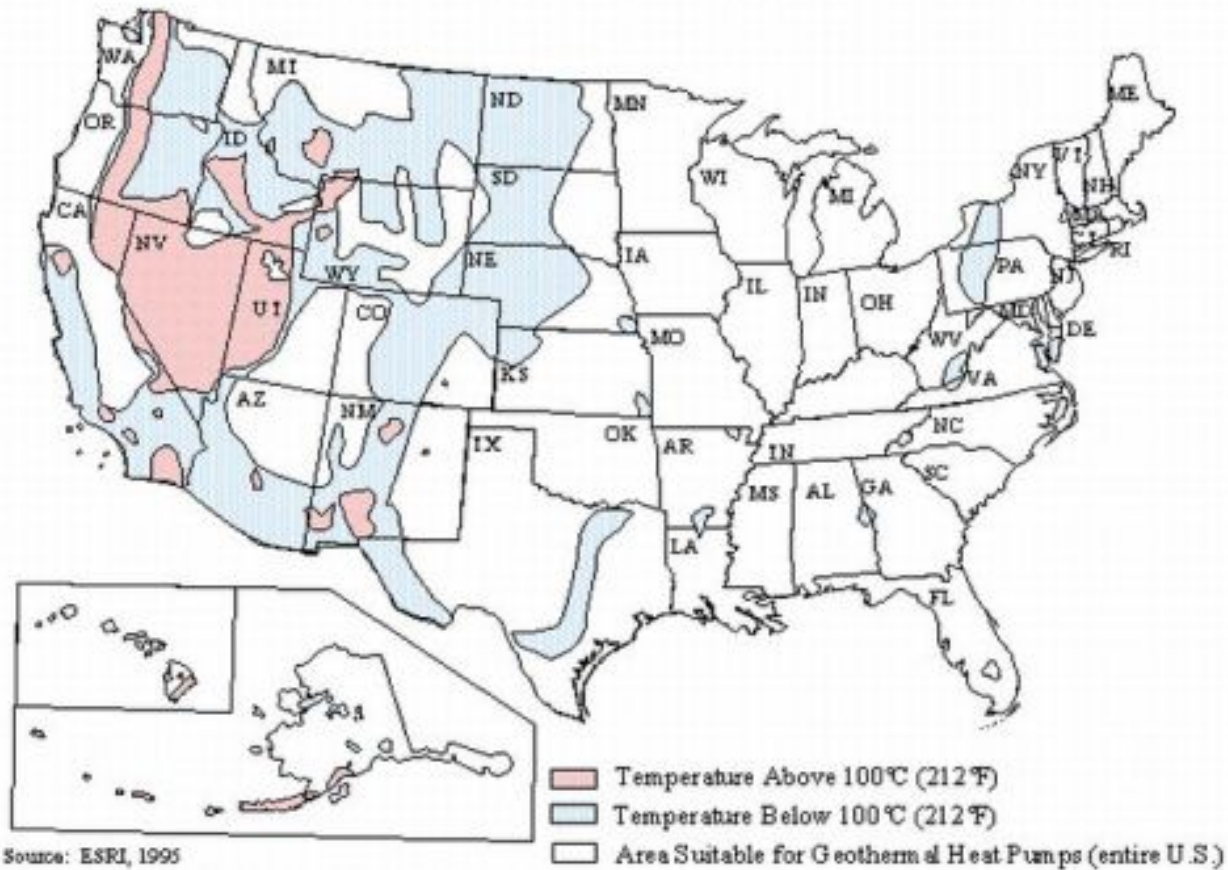
BCSEA Recommendations

Geothermal Heat



BCSEA Recommendations

Geothermal Heat



BCSEA Recommendations

Solar Thermal Heat

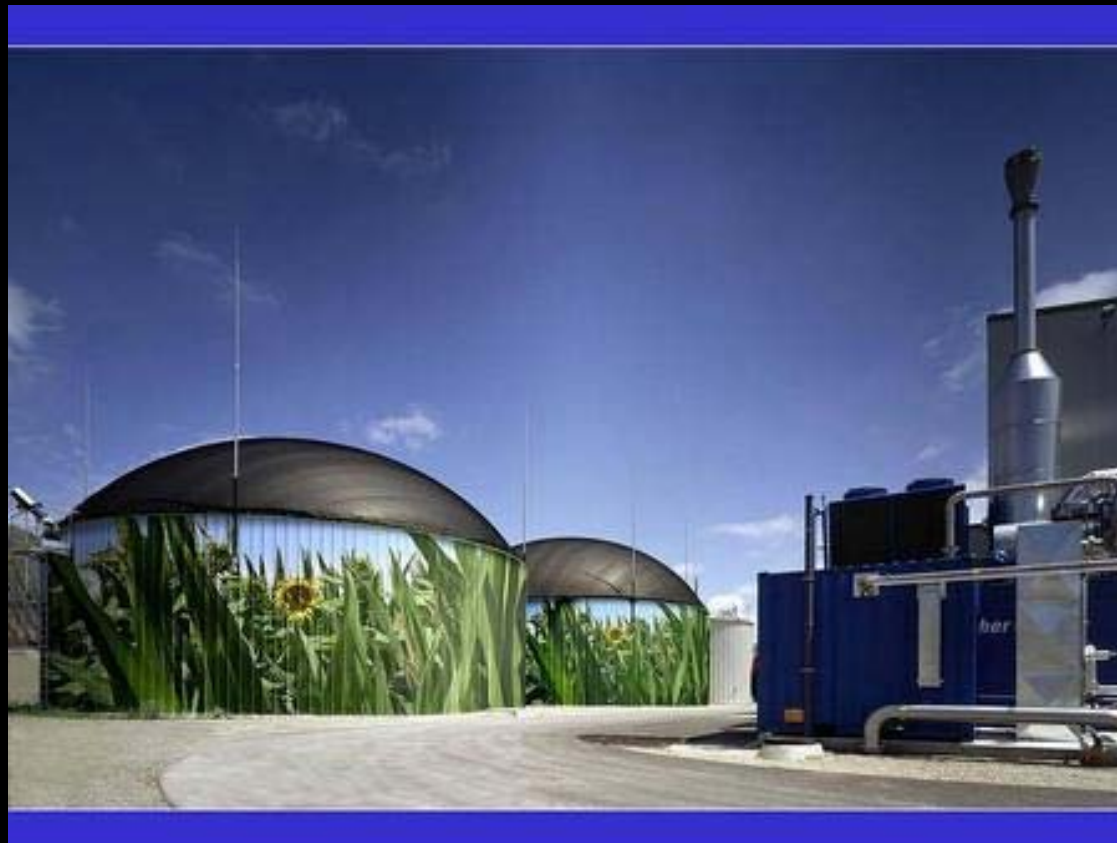
- Direct electronic metering in kWh now possible
- Tariff at eg 15 cents/kWh = \$150 - \$200 a year (20 years)
- Cost to BC Hydro above Standard Offer Program would be \$30 - \$45 per household/year



BCSEA Recommendations

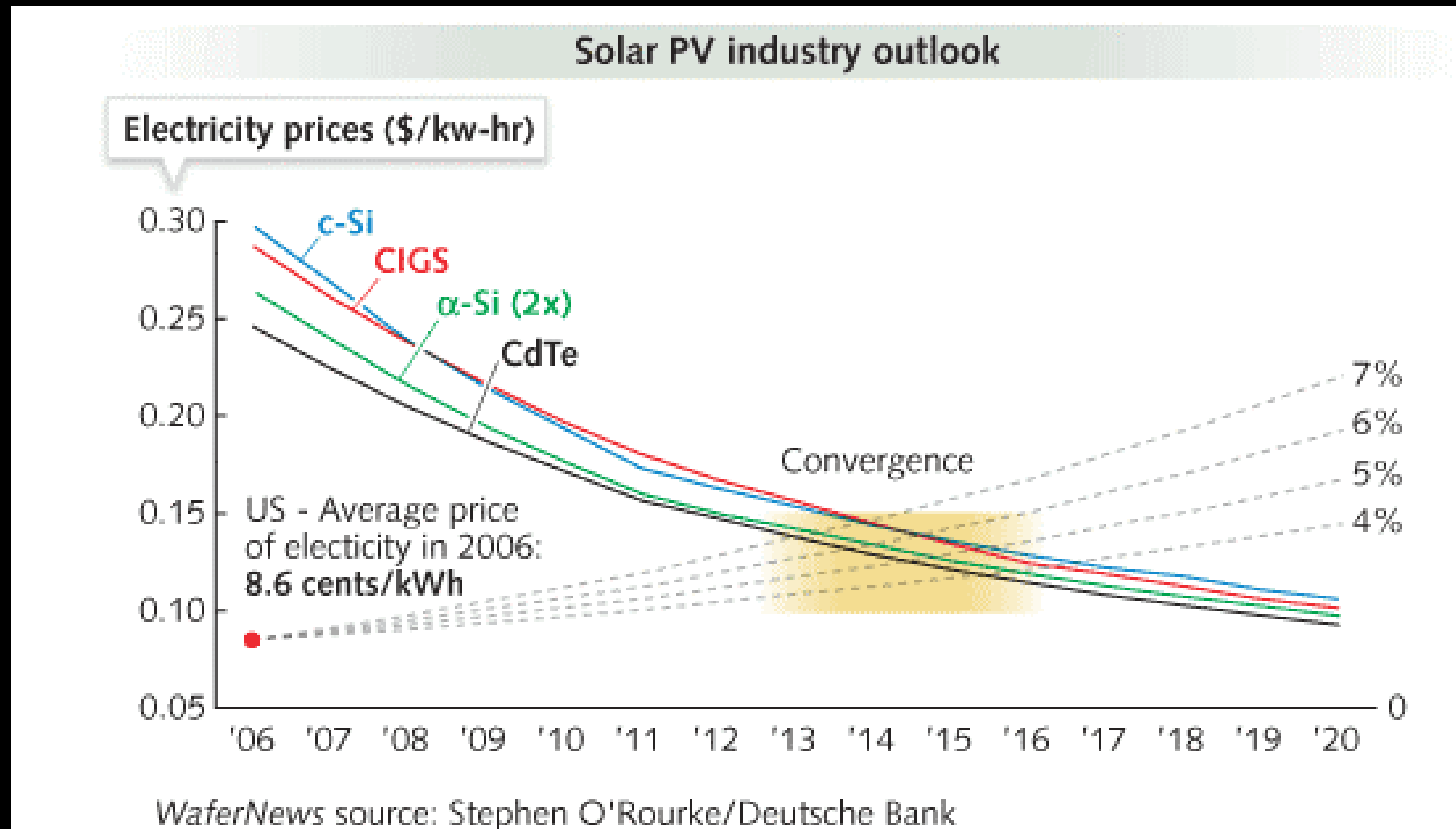
Biogas Heat

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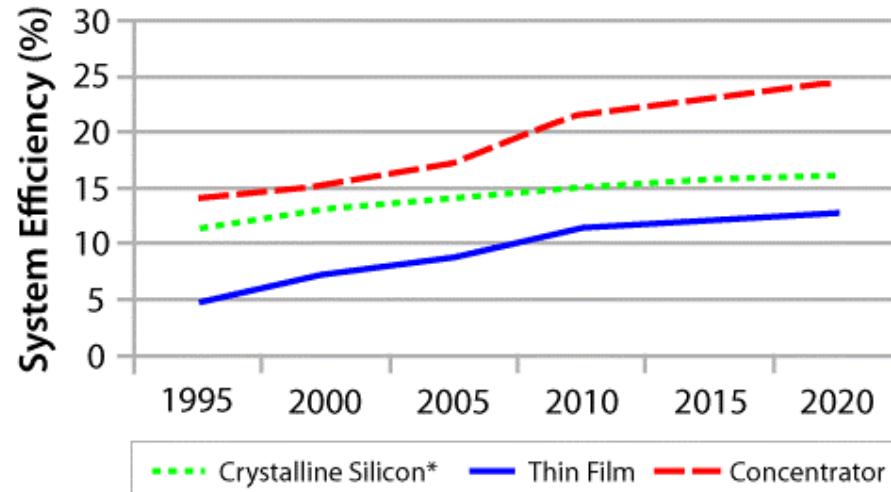


BCSEA Recommendations

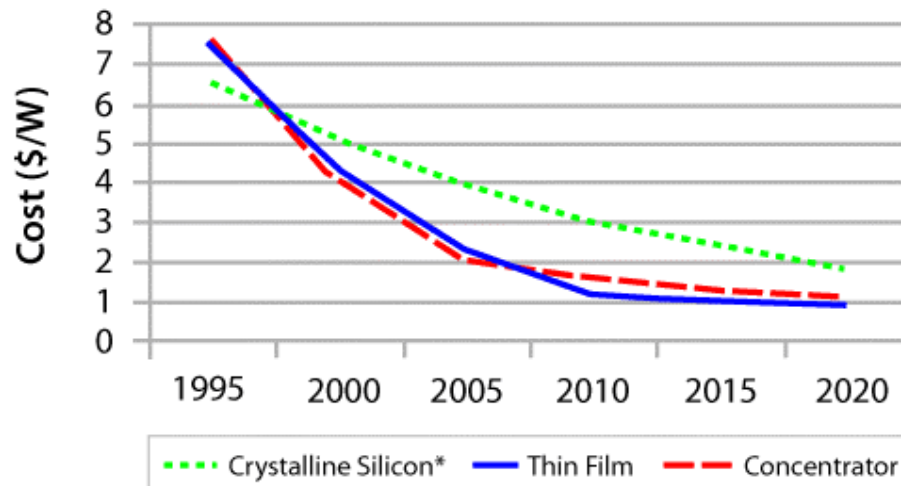
9: Include Solar PV

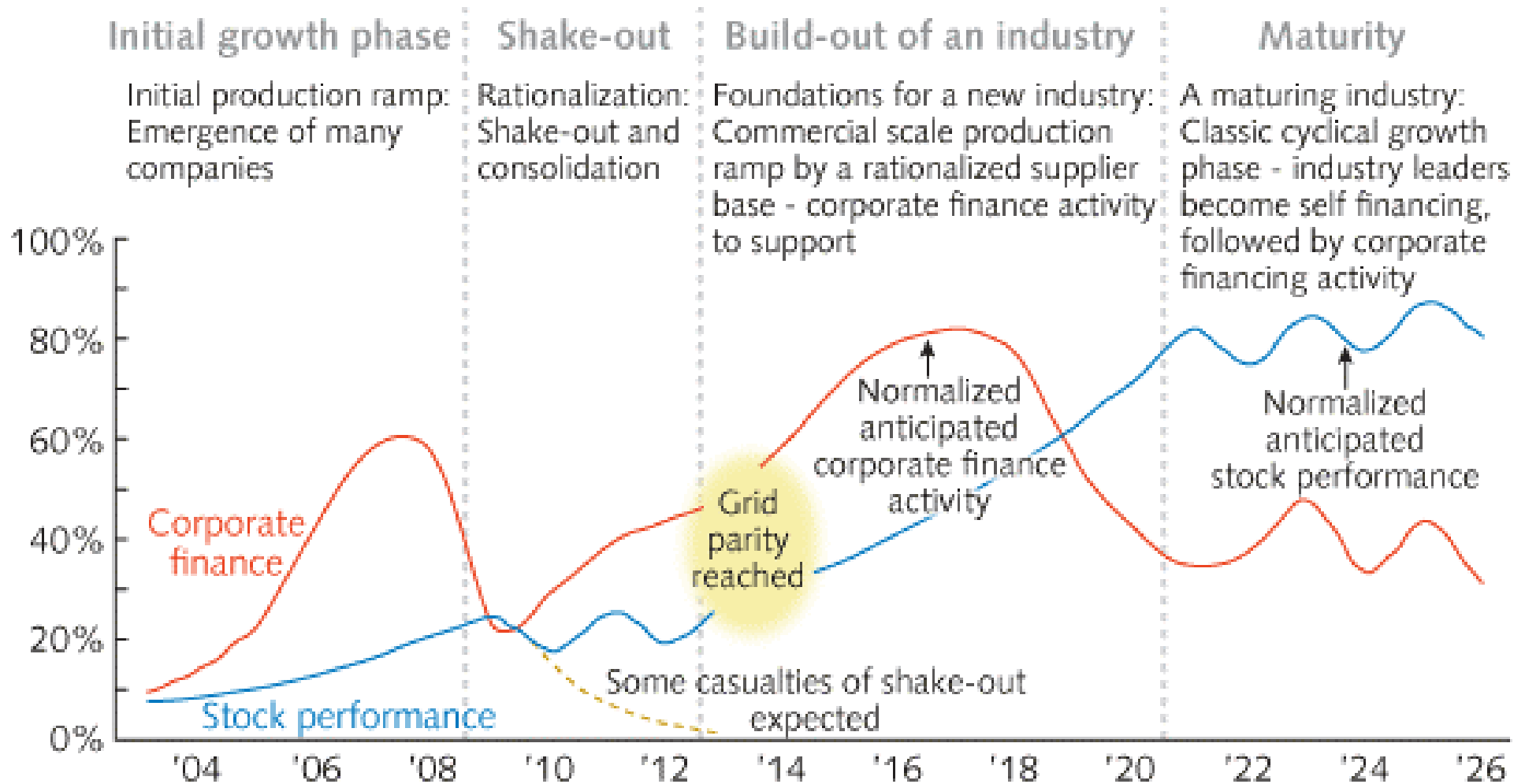


PV System Efficiency



PV System Capital Cost





WaferNews source: Stephen O'Rourke/Deutsche Bank



**Critical industry-building period
2012 - 2020**



- **Support BC's goal of 100,000 Solar Roofs by 2020**
- **Support BC's energy conservation goal (66% new load)**
- **Contribute to grid-firming**
- **Economic development, job creation**
- **Locally available sustainable electricity**
- **BC preparation for the coming solar revolution**
- **Complement in the mix of renewables needed in First Nations, non-integrated rural communities.**

BCSEA Recommendations



\$500,000 annual budget = 1,000 kW a year

\$5 million over ten years = 10 MW

1 kW = 1,000 kWh/yr 10 MW = 10 GWh/yr

Two programs being proposed...

BCSEA Recommendations

A: Super-Efficient Buildings Solar FIT

Support BC Hydro's drive to greater energy conservation by appealing to green building leaders

Support government's goal of zero net energy buildings by 2020, offsetting the load-increasing move to heat-pumps

Building type	Super-efficiency requirement	Size limit
New residential	Energide for New Homes ENH 85 (building envelope)	5 kW
Residential retrofit	Energide 80 (= 2% of average retrofits)	5 kW
New commercial	90% reduction in fossil fuel consumption	10 kW
Commercial retrofit	80% reduction in fossil fuel consumption	10 kW
All	No base-board heaters allowed	-

BCSEA's Recommendations

B: Solar Electric Vehicles FIT



**Accelerate uptake of electric vehicles
to meet BC's 33% GHG reduction goal.**

One million EVs = 1,500 - 5,000 GWh/year additional load

**10 year target = 1,000 5 kW charging posts
= 5 GWh/yr**

BCSEA Recommendations

10: Sustainable Biomass



Must -

- be designed for cogeneration of district heat
- derive fuel from sustainably managed sources
- not derive fuel from garbage
- demonstrate positive net GHG reduction, incl transport.



BC Sustainable Energy
ASSOCIATION

Thankyou!

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