

Policy and Regulatory framework for small scale distributed RE generation systems



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Policy and Regulatory frame work in India

- MNRE is supporting the small scale distributed RE systems by providing the financial assistance in the form of capital subsidies
- Depending on the technology and end use application MNRE has broadly classified such system into three categories :
 - ❑ Stand alone SPV
 - ❑ Small Wind turbine and Hybrid system
 - ❑ Roof top Solar PV
- The SERCs so far have not taken leading role in promotion of such small scale distributed RE systems in India (except WBERC)
- The legal provision under section 61(h) and section 86(e) may also be utilized for promotion of small scale RE system like centralized RE system (Wind, Biomass, SHP etc)



Overview of present MNRE schemes (1/2)

MNRE scheme	Recommended Systems	Central Financial Assistance	Eligible Beneficiaries
SPV Programme	Stand alone power plant of > 1 KWp capacity	50% of cost subject to 1.25 lakh / KWp	Non-commercial institute, SNA, SEB, ZP (except for beneficiaries from remote un-electrified census villages)
	Stand alone power plant of > 10 KWp capacity	50% of cost subject to 1.5 lakh / KWp	
Small Wind Energy & Hybrid systems	Aero generators of max capacity 5 KW Hybrid systems of max capacity 10 KW	75% of ex works cost subject to max of 2.00 lakh/KW	Community use and direct use by Govt, Defence, para military
		50% of ex works cost subject to max of 1.25 lakh/KW	Individual, industrial users. R&D , Academic



Overview of present MNRE schemes (2/2)

MNRE scheme	Recommended Systems	Central Financial Assistance	Eligible Beneficiaries
Demo and Promotion of SPV systems in Urban & Industrial area <i>Announced in Feb 2009</i>	Roof top SPV system with or without grid interaction (Min capacity 25 KW)	Rs 75 / per watt of SPV panel subject to max 30% of cost of system	Profit making bodies availing depreciation
		Rs 100 / per watt of SPV panel subject to max 40% of cost of system	Non profit making bodies

Some observations

- SWE and Hybrid scheme of MNRE is more beneficial for the residential consumers . Due to the cap on capacity (5-10 KW) , less scope for the consumers in commercial and Industrial categories
- Where as the roof top SPV scheme is more beneficial for the commercial and industrial consumers (min capacity 25 KW)
- SPV / SWE / Hybrid schemes are being treated on same platform as far as subsidies are concerned. But the scope for market expansion is different
- Capital and interest subsidies only



Comparison with diesel based generation

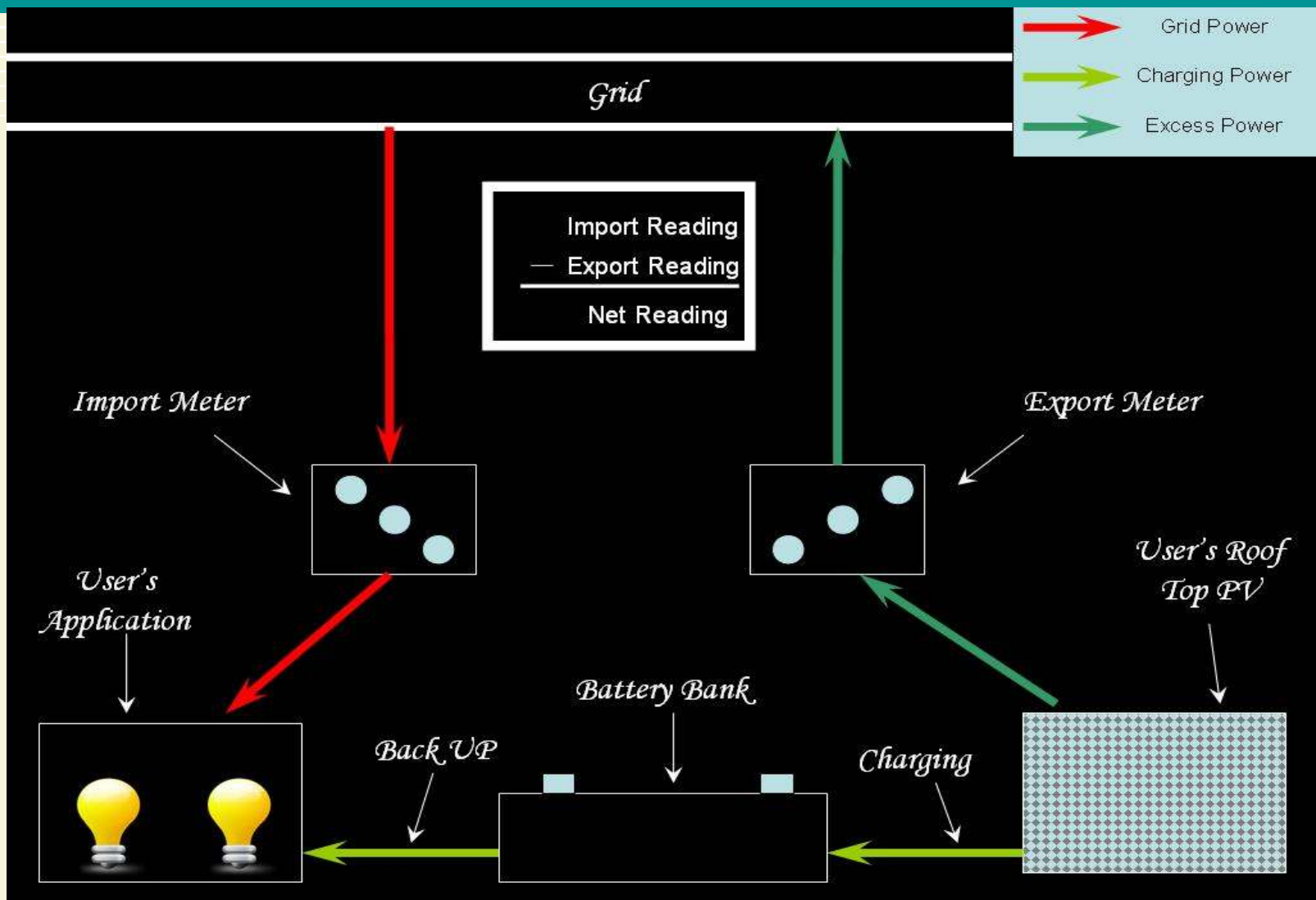
Technology	Capital cost (Rs lakh / KW)	CFA (Rs lakh/ KW)	PLF (%)	Levellised CoG over 20 years (Rs / kWh)
SPV	3.25	1.25	15	14.57
Hybrid	2.5	1.25	16	10.38
Aero generator	1.80	0.90	17	7.03
CoG of diesel based generating set				
Diesel price without subsidy (Rs/ lit)	Diesel price with subsidy (Rs/ lit)	CoG without subsidy (Rs/kWh)	CoG with subsidy (Rs/kWh)	Remarks
64	35	14.23	7.81	Without fixed cost component & externalities of fossil fuel based generation



Salient feature of WB Net billing scheme

- Roof top solar PV system ranging from 2 KWp to 100 KWp are allowed under Government sector building only
- The project developer are allowed to inject max 90 % of their consumption from the roof top solar system into the grid
- Two separate import and export meter are installed for recording the consumption from the grid and injection into the grid
- Financial settlement is carried out on net energy basis on the basis of slab tariff as per the tariff order
- Any excess generation over and above the 90% of consumption is allowed to carry forward within the same financial year
- unutilized 'carry forwards' at the beginning of new financial year will be set to zero

West Bengal experience in net billing





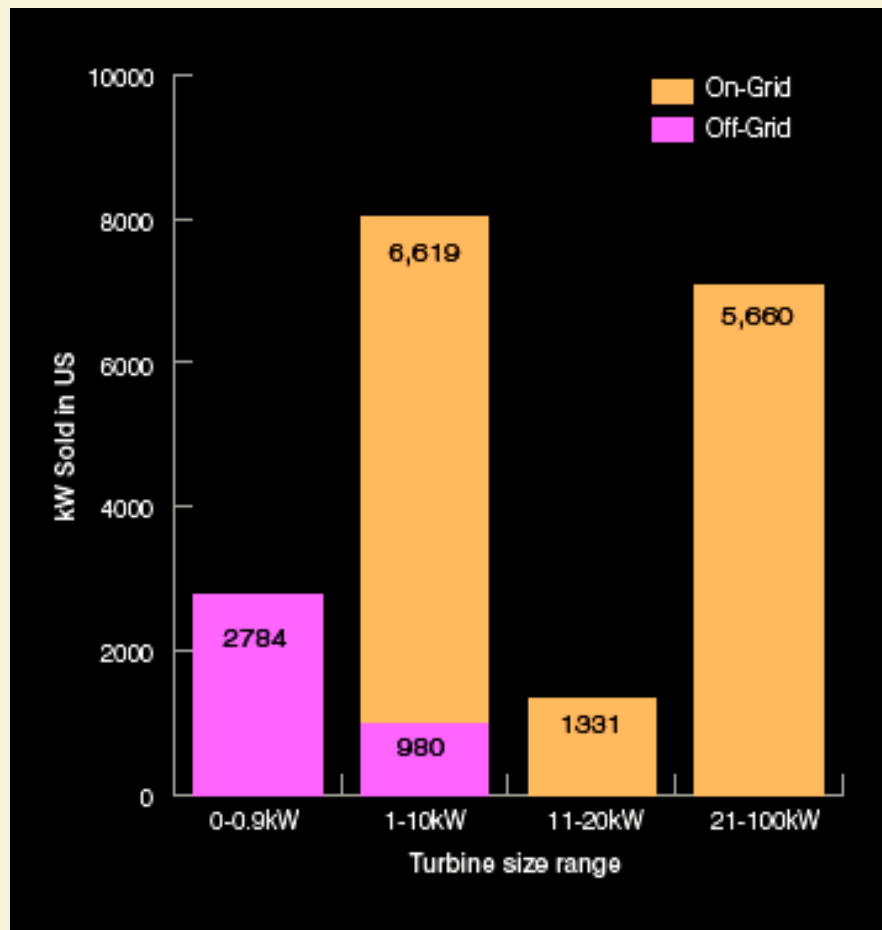
Policy & Regulatory support to small scale distributed RE generation in USA

Policy directions	Regulatory support
<ul style="list-style-type: none">✓ Federal Investment Tax Credit✓ Property tax / sales tax incentive✓ Soft loans to consumers✓ SWT testing and certification Rules✓ Installation of SWT / SPV✓ systems on Govt buildings✓ Equitable policy support across all small RE technologies✓ Streamlining Zoning permitting process✓ Loan wind measuring equipment to potential consumers	<ul style="list-style-type: none">✓ Net metering policies✓ Standardize grid interconnection Rules✓ Incentives to utility for adding small customer cited RE projects to generation mix under Renewable purchase obligation✓ Feed-in tariff for small distributed RE systems

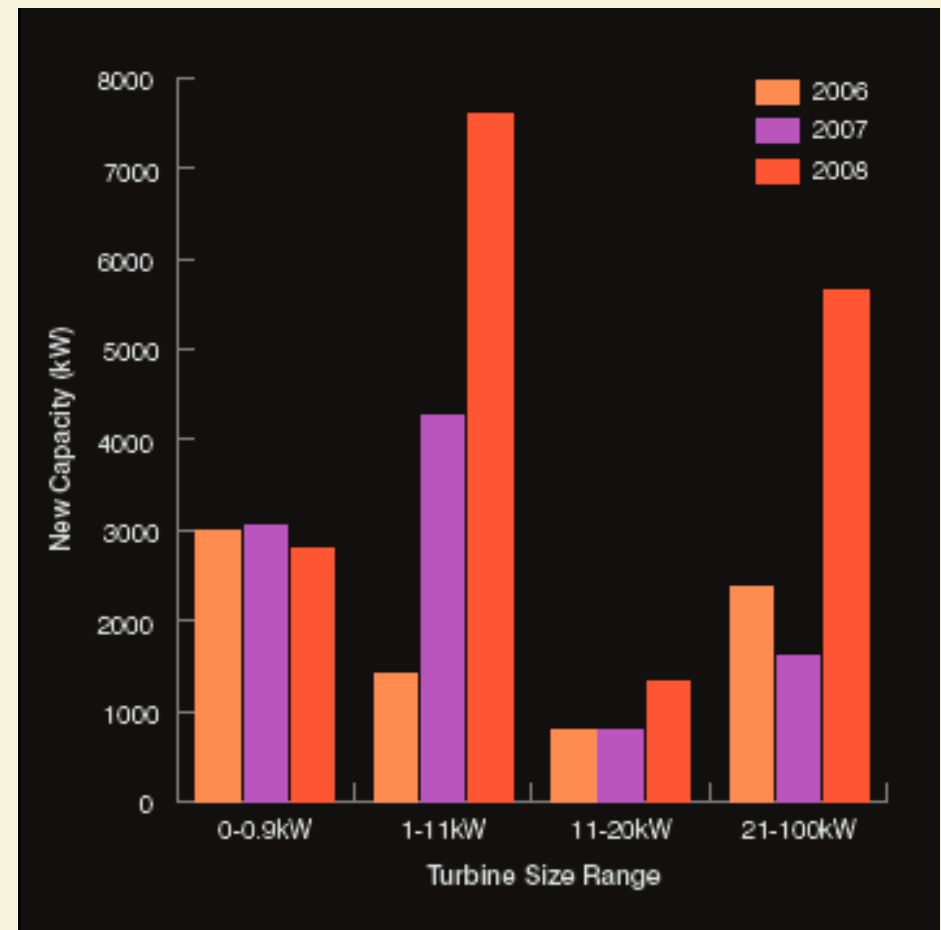


SWT market in USA

U.S SWT Market, 2008



U.S SWT Market Segment Growth over three years



Feed in tariffs in Germany

Sr No	Size of the scheme	Feed in tariff (€ ct / kWh)	Equivalent tariff in Rs / kWh*
1	Less than 30 KWp roof top system	54.43	34.72
2	30 – 200 KWp roof top	51.87	31.12
3	More than 100 KWp roof top	51.30	30.78
4	BIPV Bonus	5.00	3.00
5	Ground based SPV installation	43.42	26.05

* 1€ = 60 INR

- SERC should allow the Net metering practice in case of Small scale distributed RE generation systems
- SERC should include the Small scale distributed RE generation system as eligible source for meeting the RPS obligation by the utilities
- SERC should specify the preferential feed in tariff for electricity generated from small scale distributed RE systems
- State Government may provide additional incentives for promotion of such systems .
- More extensive Public Awareness programme by the SNA



Thank You