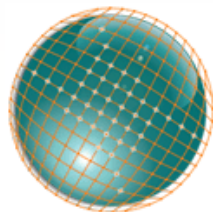


# Successful Regulatory and Incentive Policy for Renewable Energy / Smart Community

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4<sup>th</sup> International Conference on  
**Integration of  
Renewable and Distributed  
Energy Resources**  
December 6-10, 2010  
Albuquerque, NM, USA

## Conference Sponsors



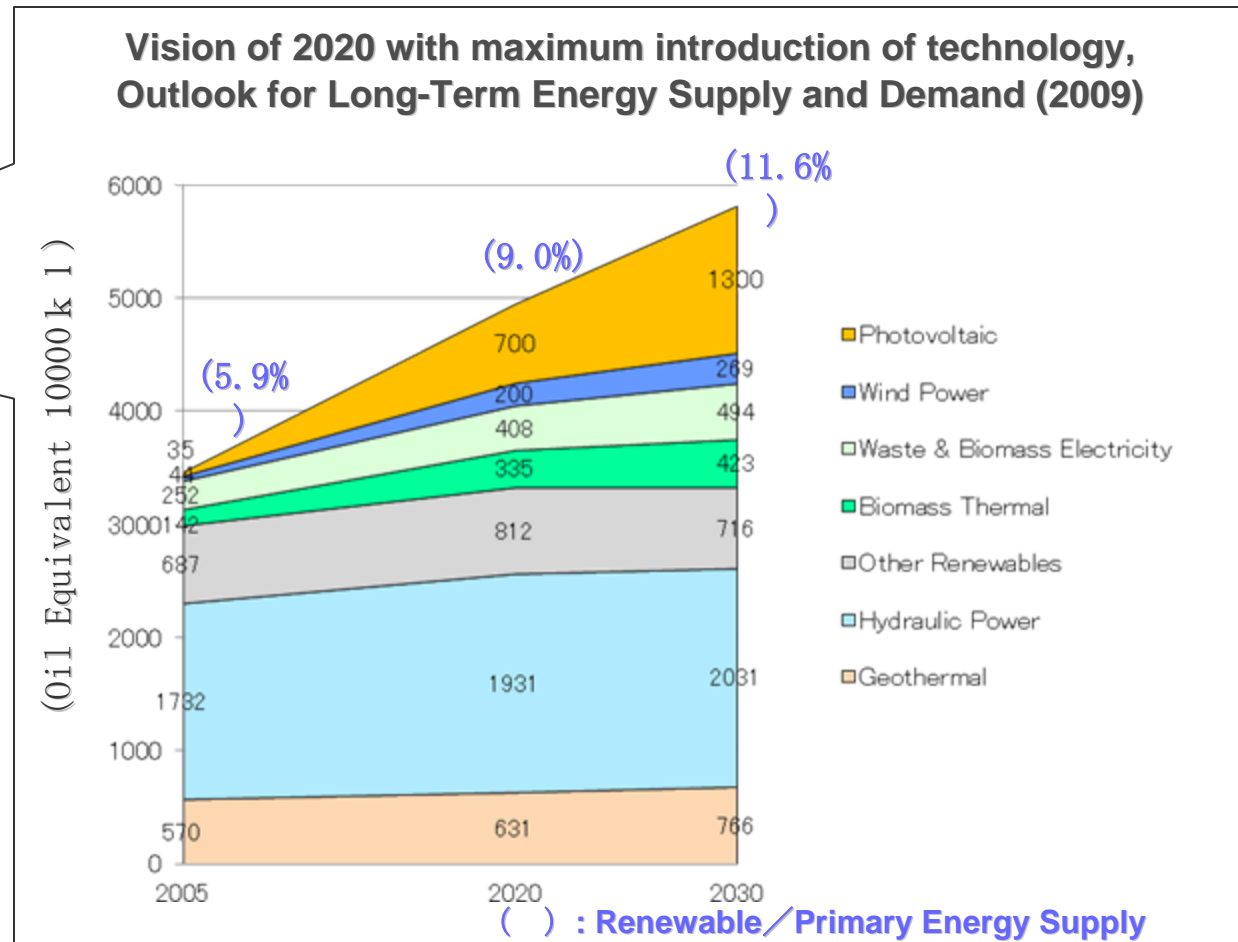
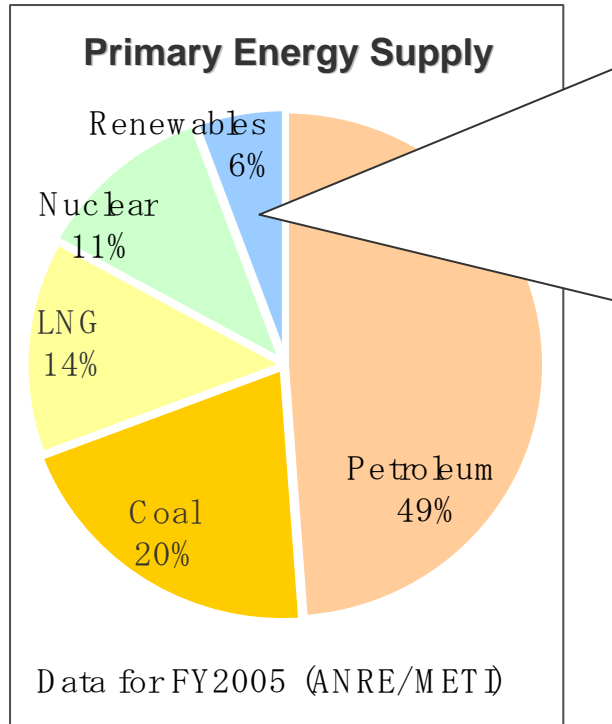
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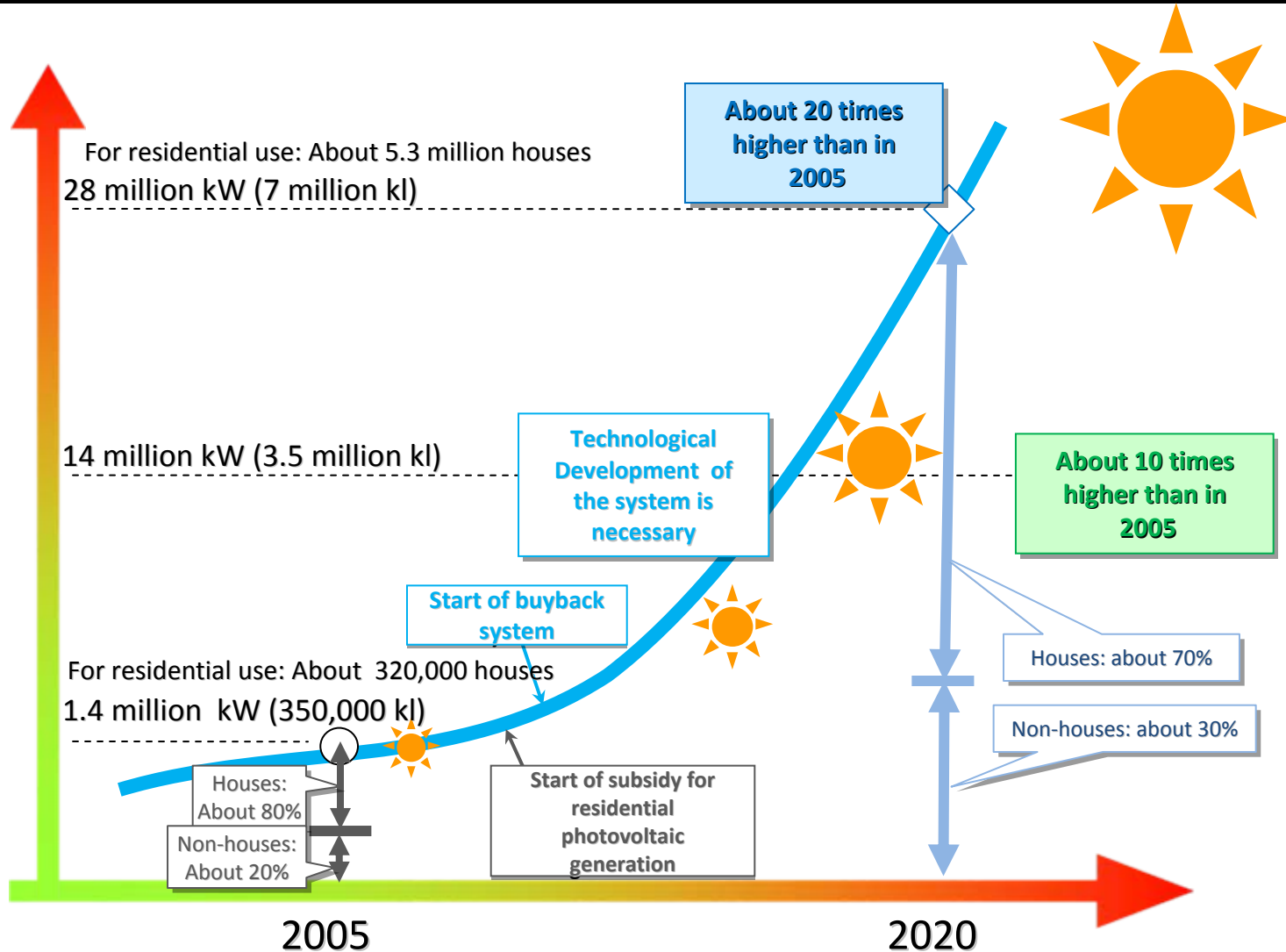
# Renewable Energy Deployment

- 3Es = Energy, Environment and Economy
- $CO_2 = CO_2/Energy \times Energy/GDP \times GDP$

■ Increase “Renewable Energy / Primary Energy Supply” to 9.0% in 2020 and to 11.6% in 2030



# Scenario for Introduction of Photovoltaic Generation (Estimate)



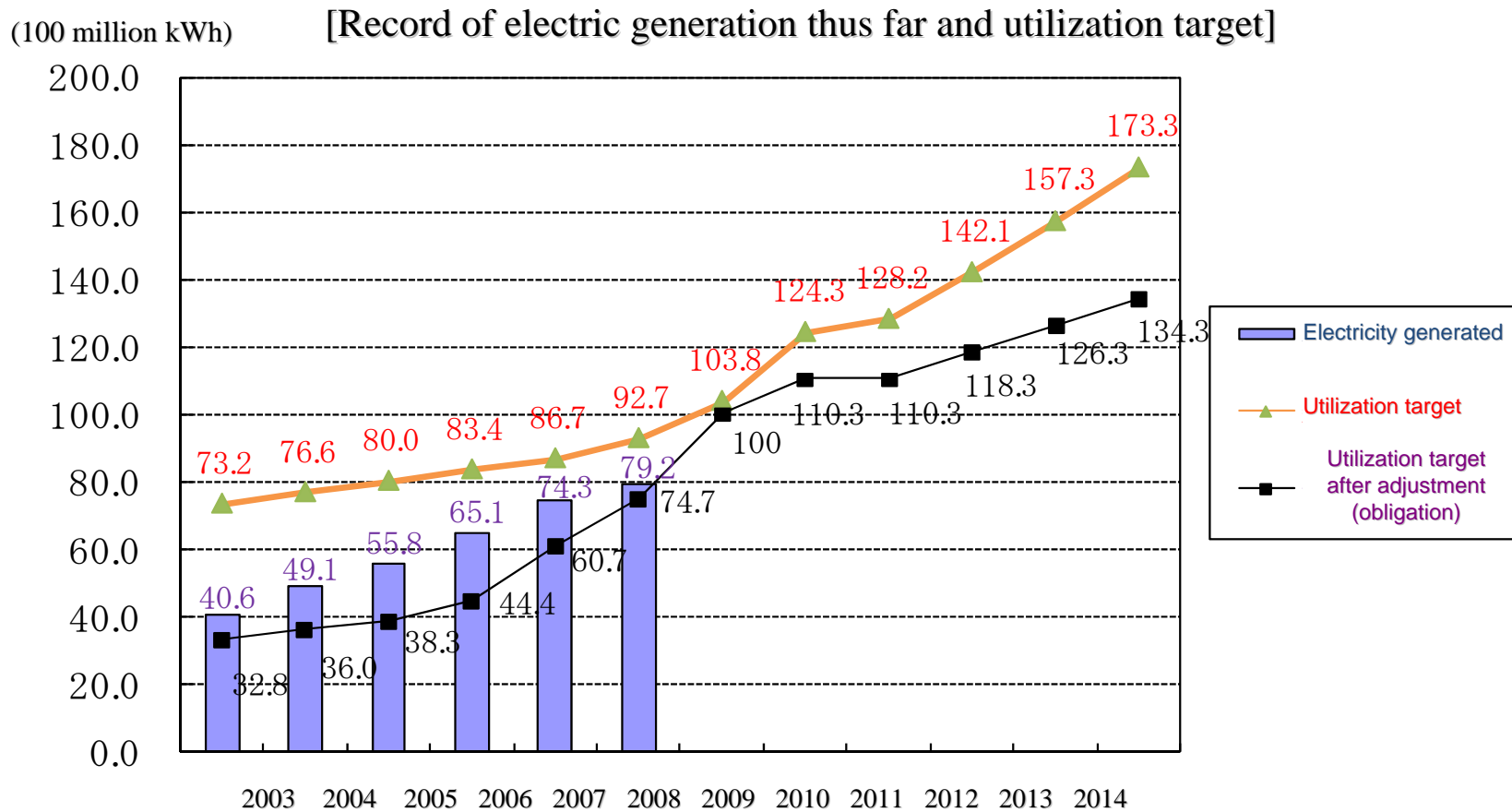
## Regulatory Scheme & Incentives

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- New Energy Promotion Act
- RPS (Renewables Portfolio Standards) Act
  - electric utilities have to use electricity generated from new renewables
  - From 4,050 Gwh (2003) to 7,920 Gwh (2008, approx 0.85% of total power)
  - the target increases until FY2014 year by year
- Incentives
  - Research and Development
  - Subsidies and tax incentives for deployment (residence and non-residence)
- New Buyback Program for Photovoltaic Generation
- Discussion on Feed in Tariff
- Access Rules and other regulations

# Incentives for Deployment - RPS

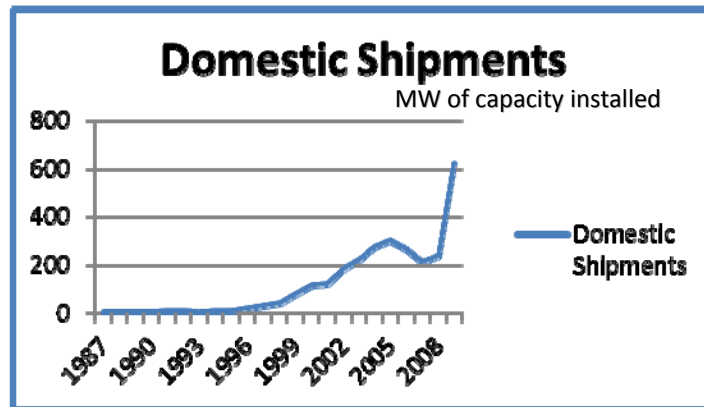
- New energy sources include wind, PV, geothermal heat (limited to those that do not dramatically reduce hot water), hydropower (limited to less than 1000 kw) and biomass.



# Incentives for Deployment - Subsidies

## Subsidies for home PV systems in the past

Year	Subsidy	Total budget
1994	50% up to 900,000 yen	2 billion yen
1997	33% up to 340,000 yen	11 billion yen
2001	120,000 yen	23.5 billion yen
2005	20,000 yen	2.6 billion yen



Data: Japan Photovoltaic Energy Association

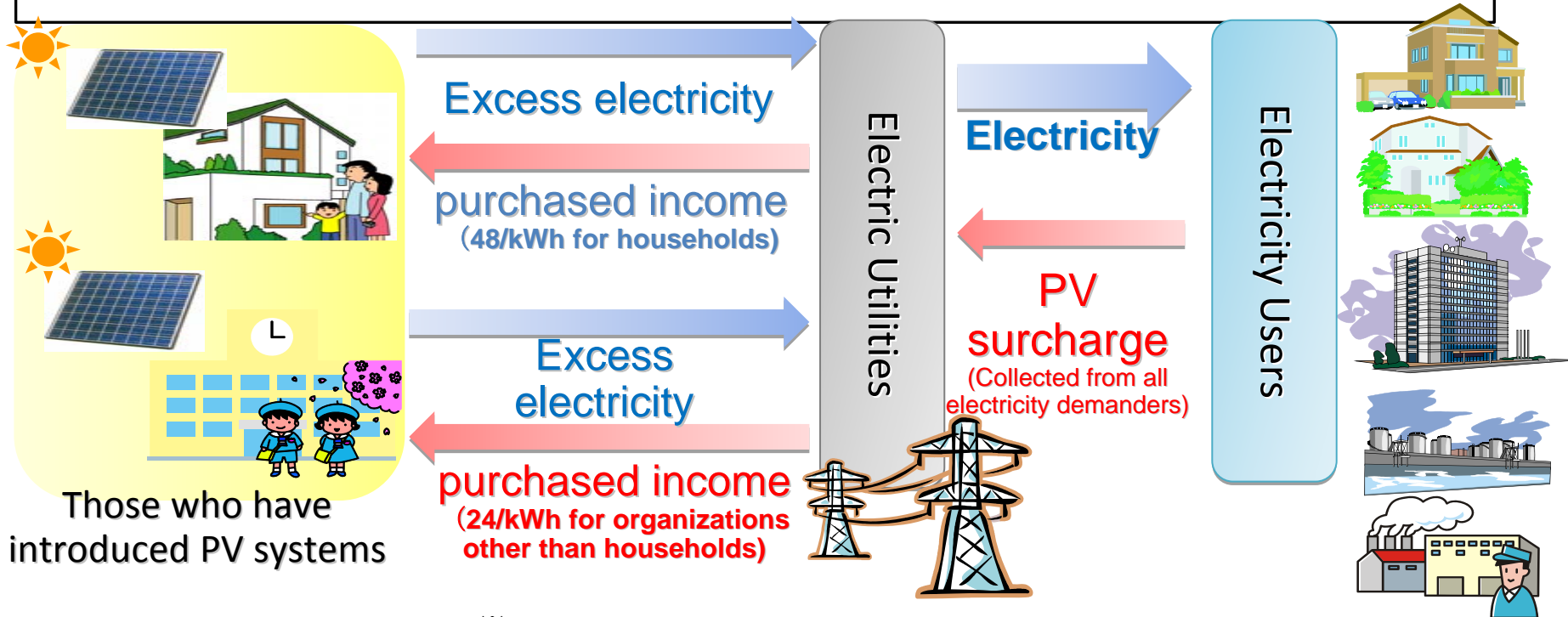
## From 2008

	for Residence	for Non-Residence
Subsidies	<b>Photovoltaic</b> <b>70,000 yen per kW</b> (system under 700,000 yen; roughly 10%)	<u>All New Energies</u> non profit bodies etc. <b>half of installation cost</b> companies <b>1/3 of installation cost</b>
Taxation s	<u>Photovoltaic</u> Tax Reduction for Home Loan and for Reform to save the energy	<u>All New Energies</u> <b>7% Tax Reduction</b> (Small & Medium Entities) or <b>Special Depreciation</b>

Cf. Total budget 74.5 billion yen (2010)

# Excess Electricity Purchase System (FIT system)

- Applies only to excess electricity generated using PV power systems
- Purchase at a fixed price is guaranteed for 10 years.  
[\*Price varies based on starting year. Initial price has been set to be 48/kWh for households (less than 10 kW)].
- All-participating system where surcharges are collected from all electricity users
- Launched on November 1, 2009
- Total cost to consumers estimated to be 80-90 billion yen/yr initially  
>> 180-300 billion yen/yr



## Extension of the Scheme

- Extension of the scheme to all renewable electricity is under consideration at METI.
- Proposal where all renewable electricity (except PV) is purchased at 15~20 yen/kWh for 15~20 years has been submitted by METI.
- The outline of the scheme will be published.

## Proposal (Optional Cases) by METI

Case	A. Range of R.E. technologies	B. Purchasing of Electricity by PV	C. Purchasing from Old Facility	D. Purchasing Rate (yen/kWh)	E. Purchasing period (years)	Cumulative Installation (GW)	Electric generation (TWh/year)	CO <sub>2</sub> Reduction (million ton)	Cost for CO <sub>2</sub> Reduction (yen/ton)	Cost for Purchasing (billion yen/year)	
1	A1 All R.E.	B1 all of the electricity generated	C1 New and old facilities	D1 one price for all types of R.E.	E3 20 years	38 ~	51 ~	31 ~	~ 52,297	1,608 ~	
3	A2 All available R.E.		C2 restricted to new facilities		20	E3/ E2	20 years	32 ~ 38	40 ~ 51	24 ~ 31	25,743 ~ 28,854
4		15			15 years						
5		20			20 years						
		B2 excess electricity in case of residences		D2 Individual assessment	E2 15 years	31	40	24	19,407 ~ 21,798	462 ~ 629	
						31	40	24	20,596	491	

## Enlargement of the Scheme (for PV)

Extend to business utilities or large size plants ?

Revision for the non-residential PV ?

→ expand to installation by non-residence and the thin film solar market

### Current Scheme for PV Excess Electricity Purchasing

	~10kW	10~500kW	500kW~
Residence excess ratio : 60% in ave.	purchasing excess electricity at 48 yen per kWh <sup>+</sup>		
Non-residence excess ratio : 10~20%		purchasing excess electricity at 24 yen per kWh <sup>+</sup>	
For Business			out of the obligation

<sup>+</sup> in case of using gas generators, the purchasing price is in principle 39 yen/kWh for the system under 10kW, 20 yen/kWh for the system over 10kW.

## Access Rules

- Need to balance “grid stability” and “renewables”
- 2 options
  - If grid operator considers grid stability may be impaired can refuse
  - × Grid operator must provide access.
- Who bears cost of connection from remote generation sites
  - Renewable producer or × all consumers (via utility)



## Recharging of EVs

- Need to balance “grid integrity / safety” and “promotion of deployment of charging stations”
- 2 options
  - Recharging stations of EVs are not “electricity suppliers” (i.e. similar to resale of electricity in a tenant building similar to recharging stations for cellular phones)
  - × Recharging stations are “electricity suppliers” and are subject to regulations similar to power companies



## What's NEDO

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- Japan's public R&D management Organization
- Promotes R&D in the industrial, energy and environmental technologies.
- Established on October 1, 1980
- Chairman: Mr. Seiji Murata
- Personnel: About 1,000
- Budget: Approximately \$ 2B