#### **Amazing Atacama Lecture Materials**

# **Smart Grid for Solar Tao Project**

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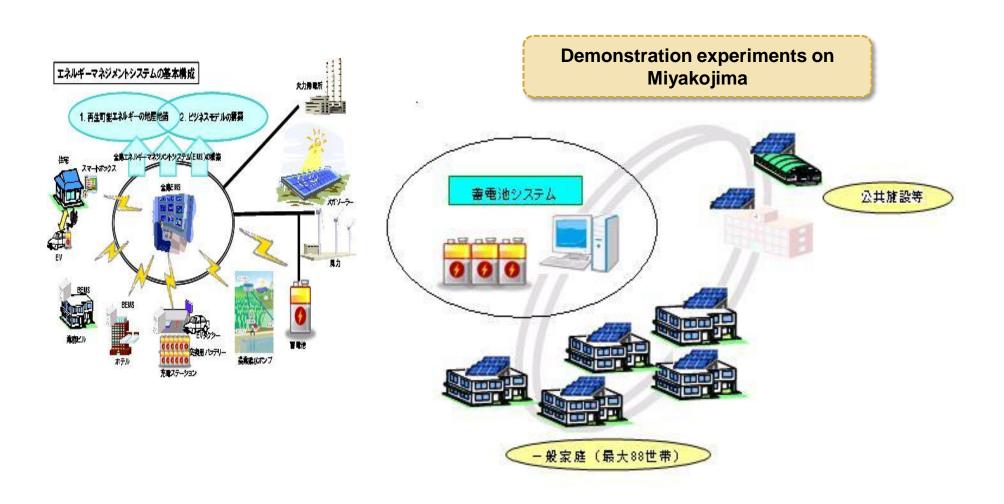


#### ■ Special Features of Japan's Smart Grid Technology (1)

- **1** Operation tests of PV-based systems
  - In contrast to U.S. and European wind-based systems, Japan's attention from early on has been focused on PV
- 2 Much research on grids for remote areas such as isolated islands, etc.
  - Demonstration experiments on Miyakojima
  - Contributions to elevating electrification rates and solving environmental problems
- ③ Technology for power distribution including electric vehicles (rechargeable batteries)
  - Use of EVs for electric power storage
  - Optimized use of weak power sources via advanced supply-and-demand control systems
- 4 Use of energy-saving technologies at every turn
  - Applications of energy-saving technology in commercial buildings, homes etc



### **■** Special Features of Japan's Smart Grid Technology(2)



Source: Toshiba Web Site

## ■ Japanese Smart Grid Technology Useful for the Solar Tao Project

- **1** Large-scale Electricity Storage Technology
  - 1 MW-range high-performance large-sized Lithium-ion battery
- **2** High Performance Power Conditioner
  - Highly efficient power conditioner technology to accompany the diffusion of PVs
- ③ Electric Vehicles (EVs)
  - Long record of performance in connecting to the grid, from small cars to large buses
- **4** Distribution Control System
  - Advanced supply/demand system to control unstable networks
- **5** Energy Conservation Technology
  - Many technologies to support energy conservation in factories, buildings, homes



#### ■ Solar Tao Project Issues and their Solutions via the Smart Grid

- 1 Weak electric power system
  - → Advanced supply/demand control system, Stabilization of electricity supply through storage cells
- ② Environmental considerations (Reduction of CO2 emissions from electricity generation and automobile exhaust gas)
  - → Mega Solar, Electric Vehicles
- 3 Efficient use of a high ratio of sunlight hours
  - → Minimization of natural gas- and diesel-fired generation through the introduction of MegaSolar
- **4** Contributions to the local community
  - → Stable supply of electricity
  - → Contribution to the tourism industry through the use of electric buses, etc.



#### ■ Possibility of Applying the Smart Grid to the Solar TAO Project

