Panel Discussion on Sustainable Communities

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ENERGY INNOVATION
ENERGOPARK

Definition of Sustainable Community

"A sustainable community (planned, built, or modified) is one that is economically, environmentally, and socially healthy and resilient.

"It meets challenges through integrated solutions rather than through fragmented approaches that meet one of those goals at the expense of the others."

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SC – Back to the Definition

*"A sustainable community (planned, built, or modified) is one that is **economically**, **environmentally**, and **socially** healthy and **resilient**.*

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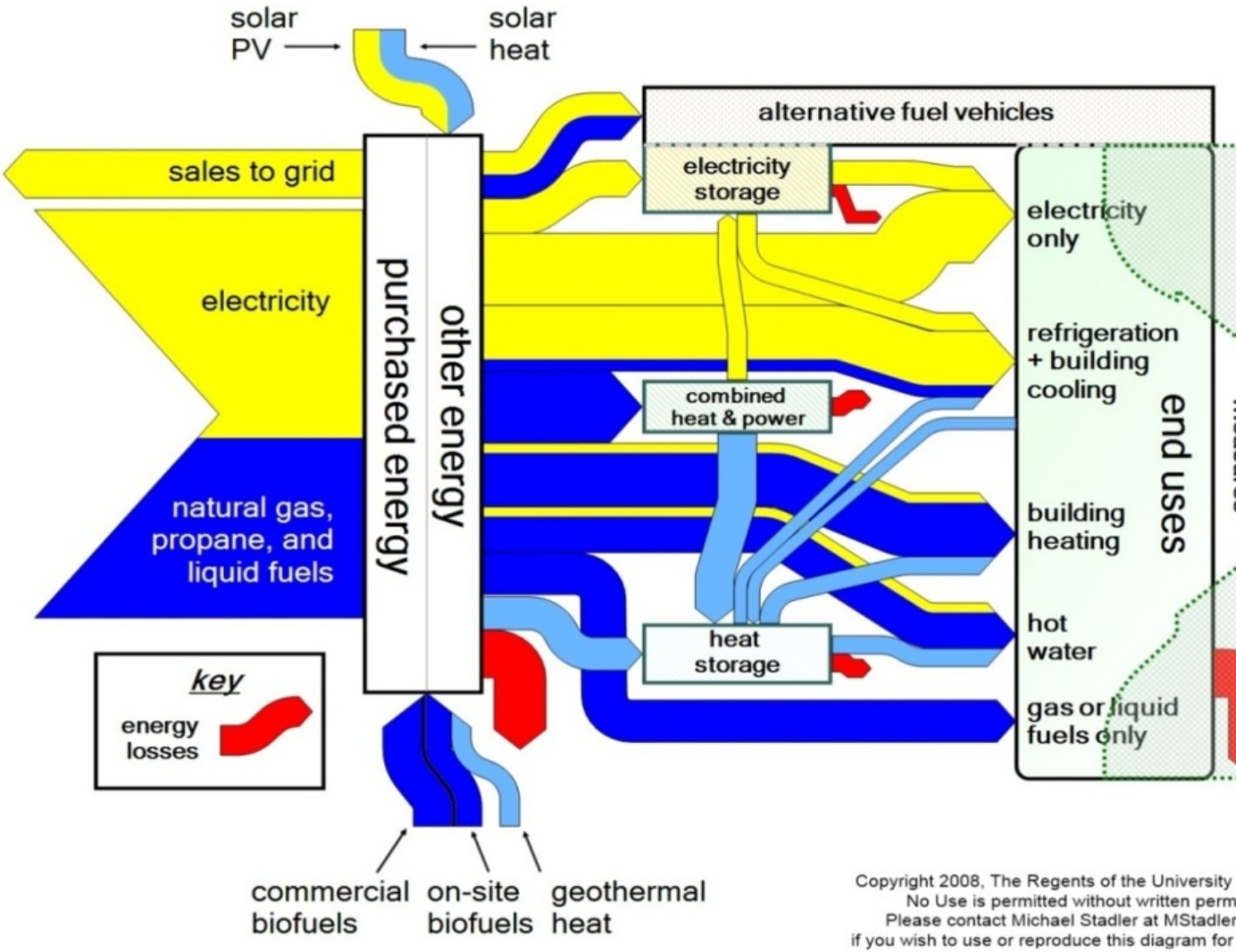
Microgrids offer a whole portfolio of options

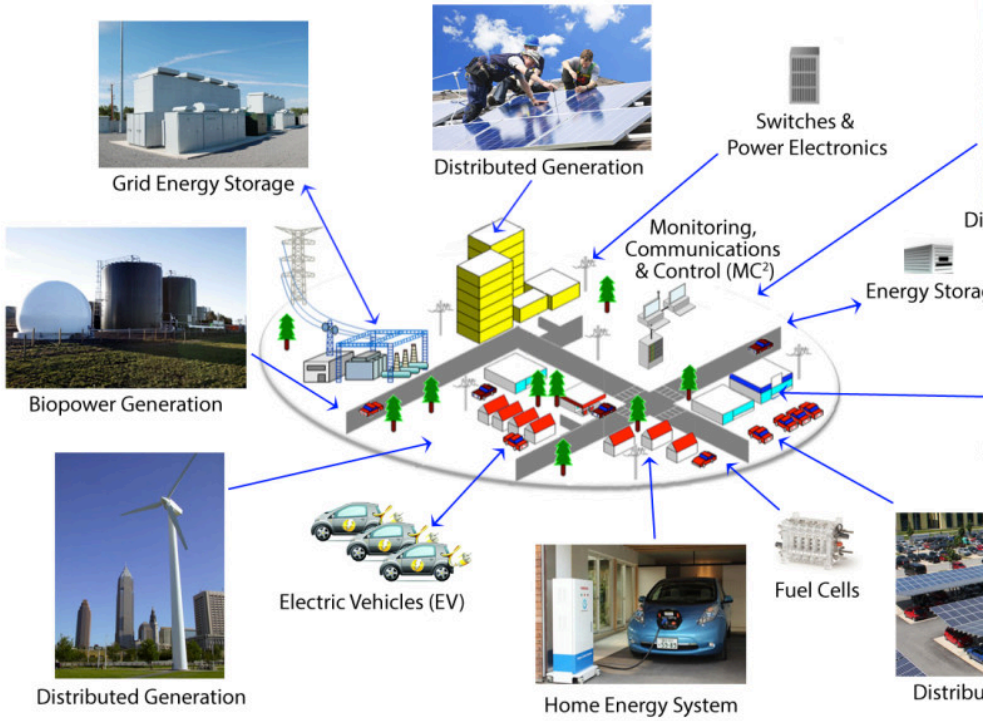
- **Sustainability**
- **Resilience**



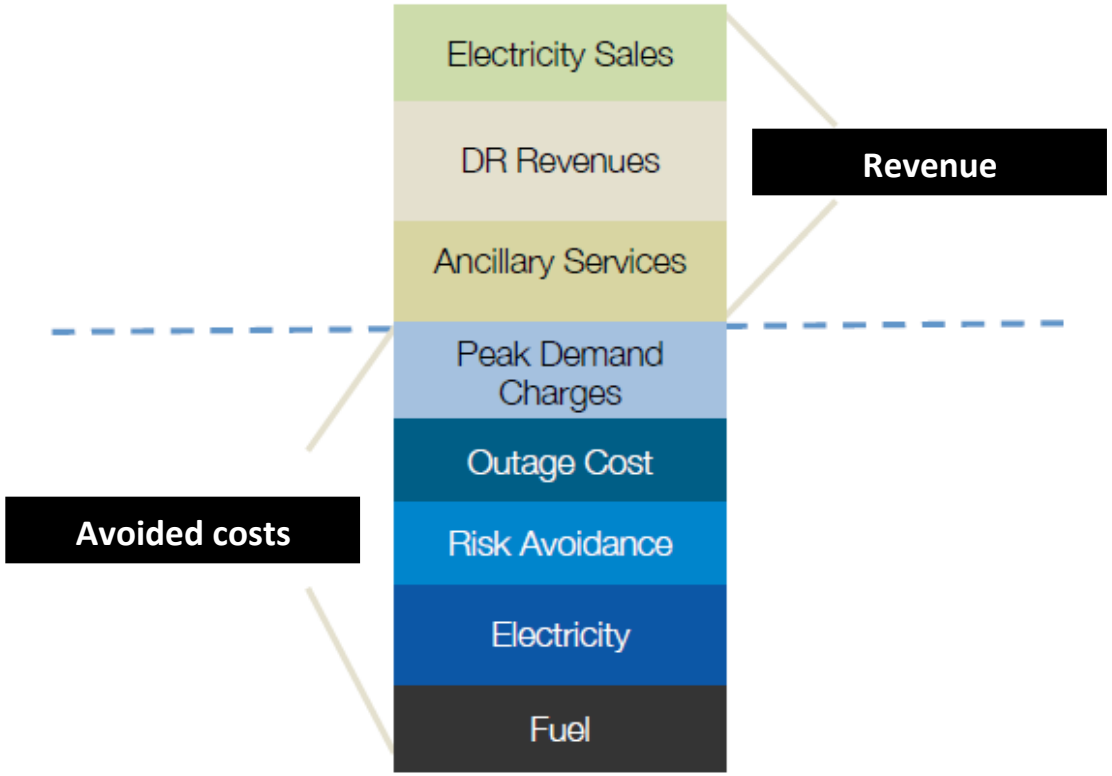
Community Microgrids

Microgrid systems serving multiple, differentiated customers, typically across public rights of way and property boundaries

- Potential for helping local communities to achieve their goals for resiliency, environmental performance, renewable integration, economic development…
- Barriers exist: network design and configuration, technical options, system integration, regulation, contracting, financing, ownership and operations.



Microgrid Economics



Source: GTM Research, North American Microgrids 2014: The Evolution of Localized Energy Optimization

MG VALUE =
AVOIDED COST + INCOME – PROJECT COST - OPERATING COST

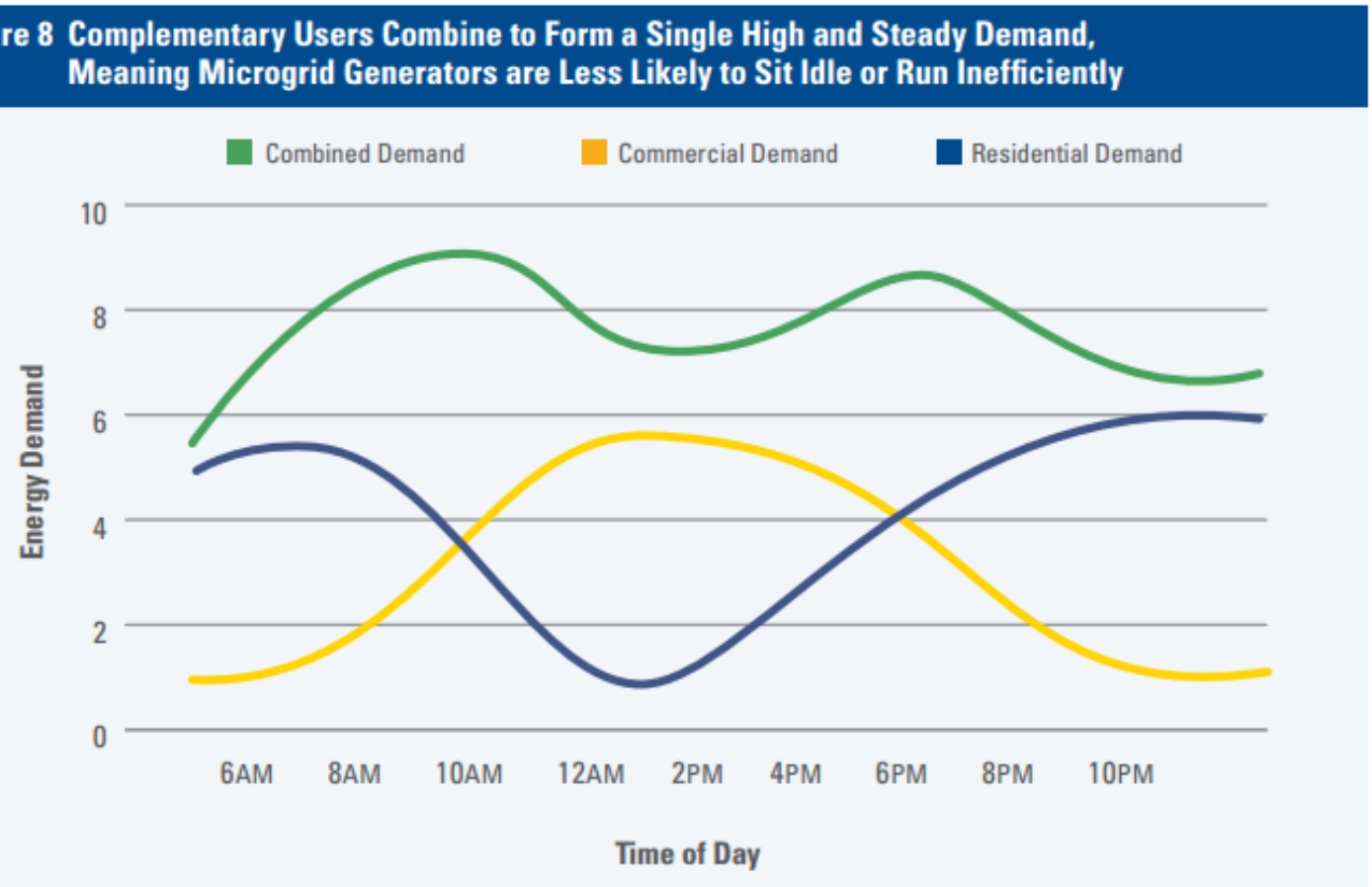
Microgrid Value will be shared between utilities, end-users, third parties or co-owners depending on the ownership model

In the community/municipal environment, th drivers would be **granting reliability/resilie power/energy costs reduction**

Example: **Community**

Communities – Complementarity of Demand

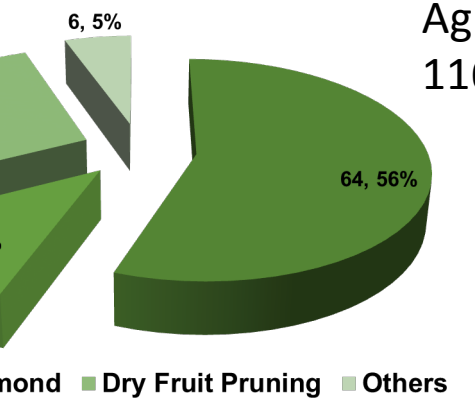
Load complementarity favours microgrid investments



ENERGOPARK's work in the Algarve, Portugal

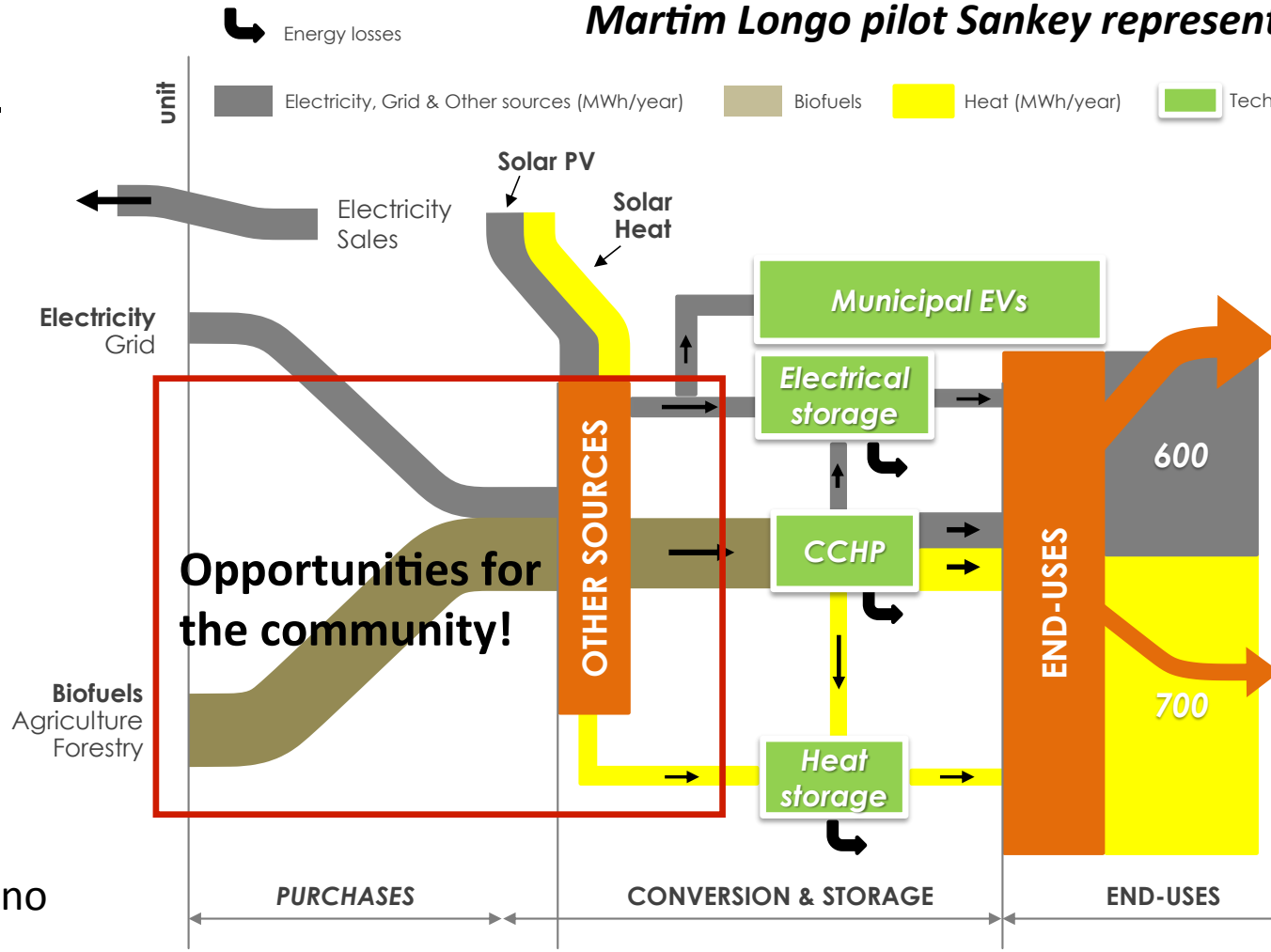
Key for developing sustainable community projecs:

Addressing real community concerns, through very effective engagement of project stakeholders



Agriculture
116GWh/y

Forestry
17 GWh/ano



MPP's Green Islands project – The Azores

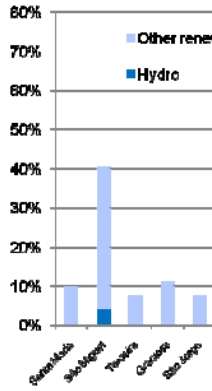
All islands have volcanic origin, with Pico as the highest peak in Portugal (2351m altitude);

Located about 1500km (930mi) west from the mainland,

Economy primarily based on Tourism, agriculture, dairy farming and fishing;

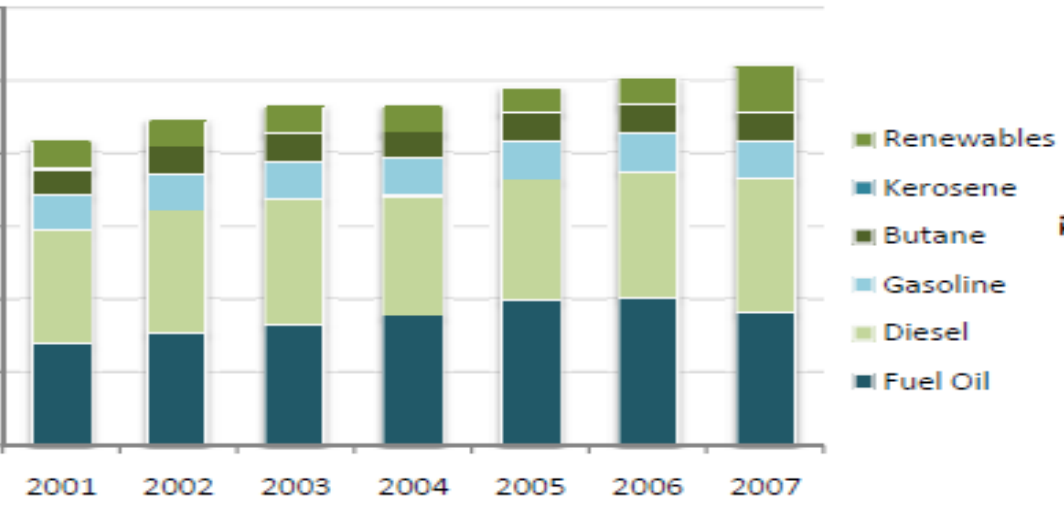
Around 240 000 inhabitants.

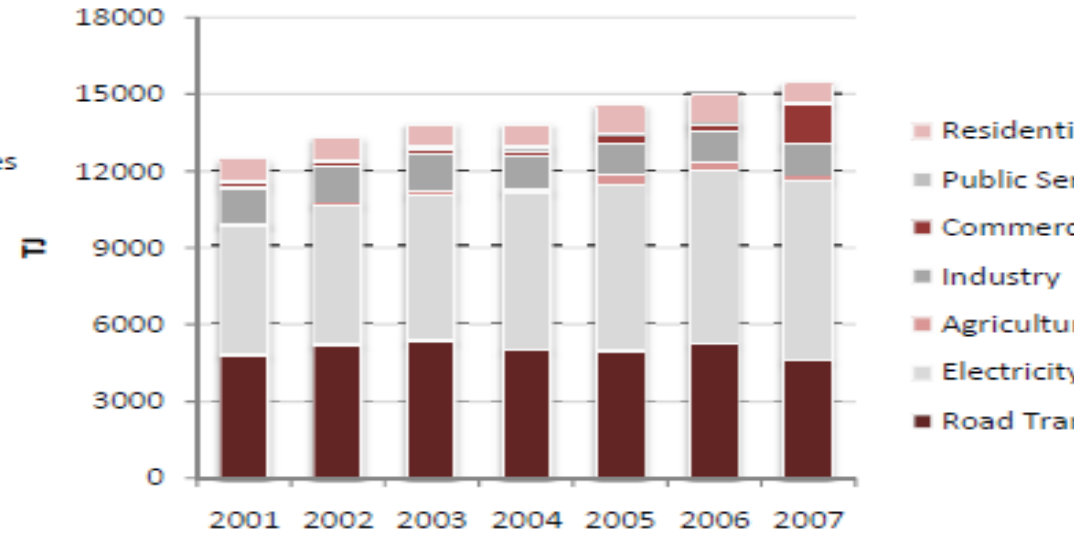
ne Azores - Problems



Azores Energy Outlook:

- Imports 90% of its energy needs
- Electricity Production (47%) and Road Transportation (33%) are the largest primary energy consumers





he Azores Archipelago

Goals for the Archipelago

- 75% of renewables on electricity production in 2018
- 40% of renewables on primary energy
- EDA ambitious plan
  - Increase renewable electricity production
  - Electrification of fossil fuels uses
  - Energy Efficiency

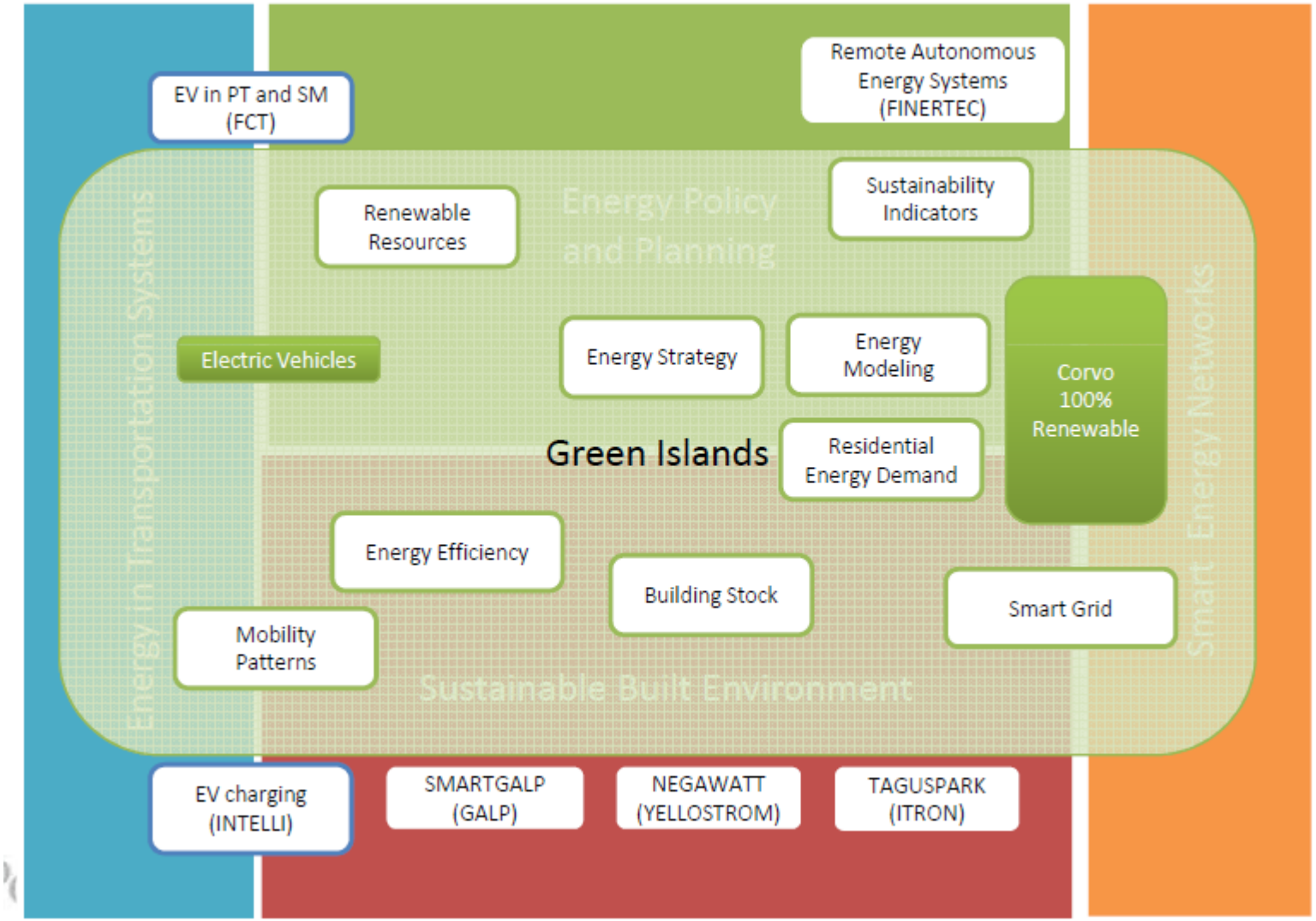
Questions

- Which technology? Which models?
- Involve the people?
- How to create economic value?

Green Islands AZORES

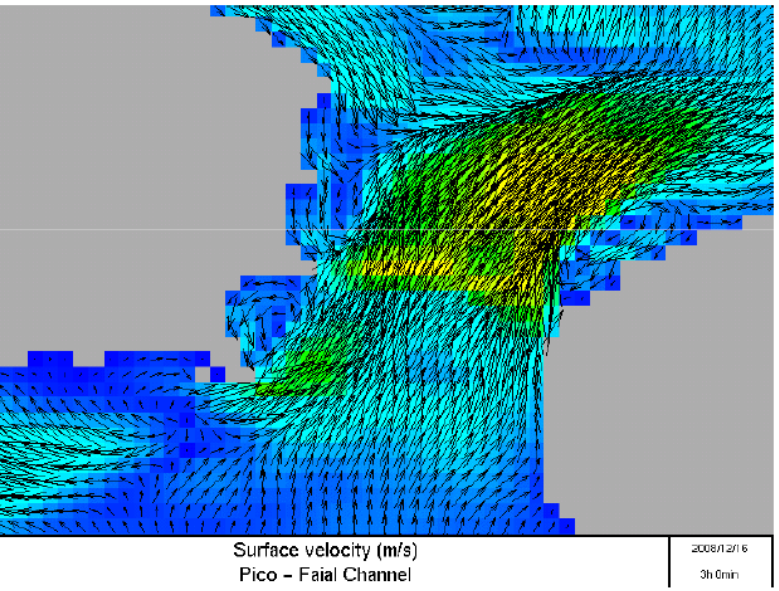
SGC Energia | G

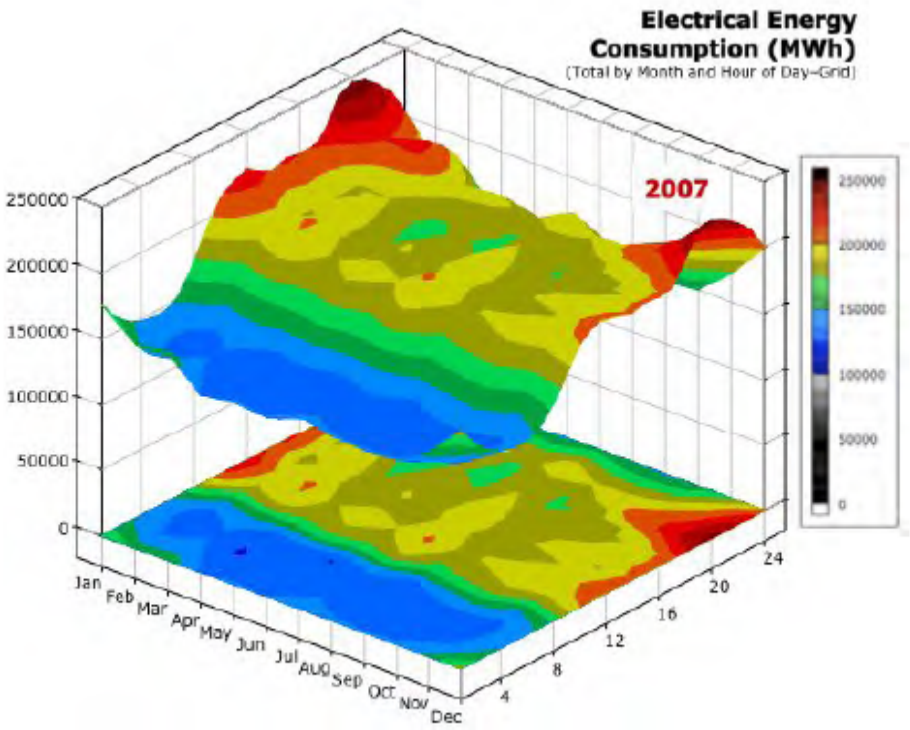
GIP – Sustainable Energy Systems Research

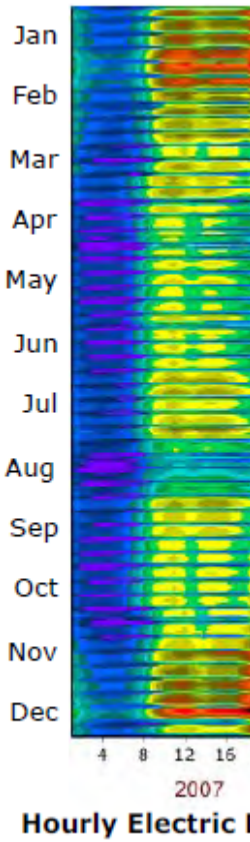


Matching Electricity Demand Dynamics to Diverse Renewable Supplies

Tidal Resource characterization







Approach to PEV introduction

Daily electricity generation profile in the Island of São Miguel (an example May day).