

**RECIPE: Reducing Energy  
Consumption through Protocols  
Exploration**

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# Use cases

- Energy time management
  - Plug-in hybrid is notified when it should charge
  - Dishwasher, water heater run after midnight
  - “when can I get 100 kW?”
- Utility requests load reduction
  - “please reduce load by 1 MW”
- Energy management
  - “Dear fridge, how many kWh have you used?”

# Architecture

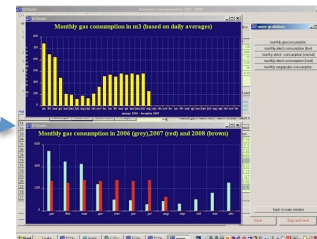
- Discover controllers and elements
  - Utility (gas, electric)
  - Local controllers
- Authenticate
  - Prices and actions may depend on customer contract
- Control
- Information



“wash at 1900”



“charge at 2300”



“what’s the projected cost of a kWh at 1500?”