

Aggregating Distributed Generators

Presentation to

DOE DPP & Industrial DG

Review Meeting

July 10, 2002



A WPT Company



Aggregating Distributed Generators

NREL Subcontract AAD-1-30605-08

TPO: Ben Kroposki

PI: Howard Feibus

July 9, 2002



A WPT Company



Project Goals

- To demonstrate the aggregation of backup generators by adding controls to make them immediately dispatchable from a single control point when required to provide spinning reserve, interruptible load and peak power to the utility grid.

Project Objectives

- Base Year: Develop monitoring/controls; conduct feasibility analyses, design Field Test and survey backup generators in LIPA territory.
- **Option Year 1: Develop, Install and Conduct Field Test; Develop Commercial Design.**
- Option Year 2: Procure, Install and Operate a 30 MW commercial aggregation/dispatch service.

Option Year 1: Tasks

- 1) Field Test of Aggregated DG Monitor/Control/Communication System**
- 2) Survey of Backup Units in New York State and recruitment 30MW of backup generation**
- 3) Design of Commercial Demonstration**

Status: Task 1

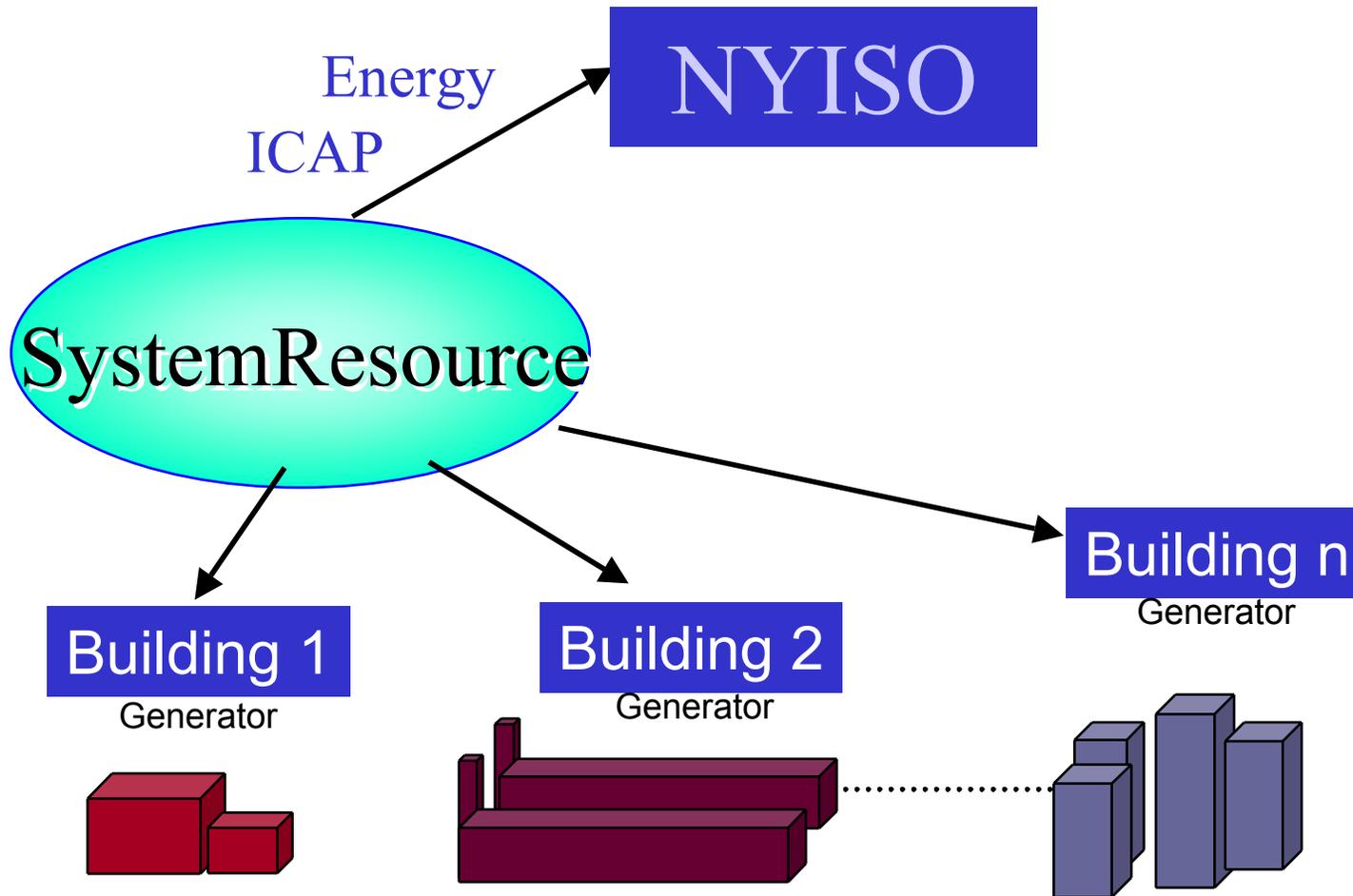
1) Field Test of Aggregated DG Monitor/Control/Communication System

We're Live!

First System Resource (SR)

NYISO Recognizes SR as a Generator

System Resource = Virtual Power Plant



Approved by NYISO to be the First System Resource (SR)

A collection of Verizon curtailable loads; each served by a backup generator (BUG).

Hempstead (1200)

Bayshore (500)

Sag Harbor (140)

Cutchogue (140)

Huntington (600)

Roslyn (350)

E. Hampton (140)

Hicksville (500)

Smithtown (500)

Brentwood (800)

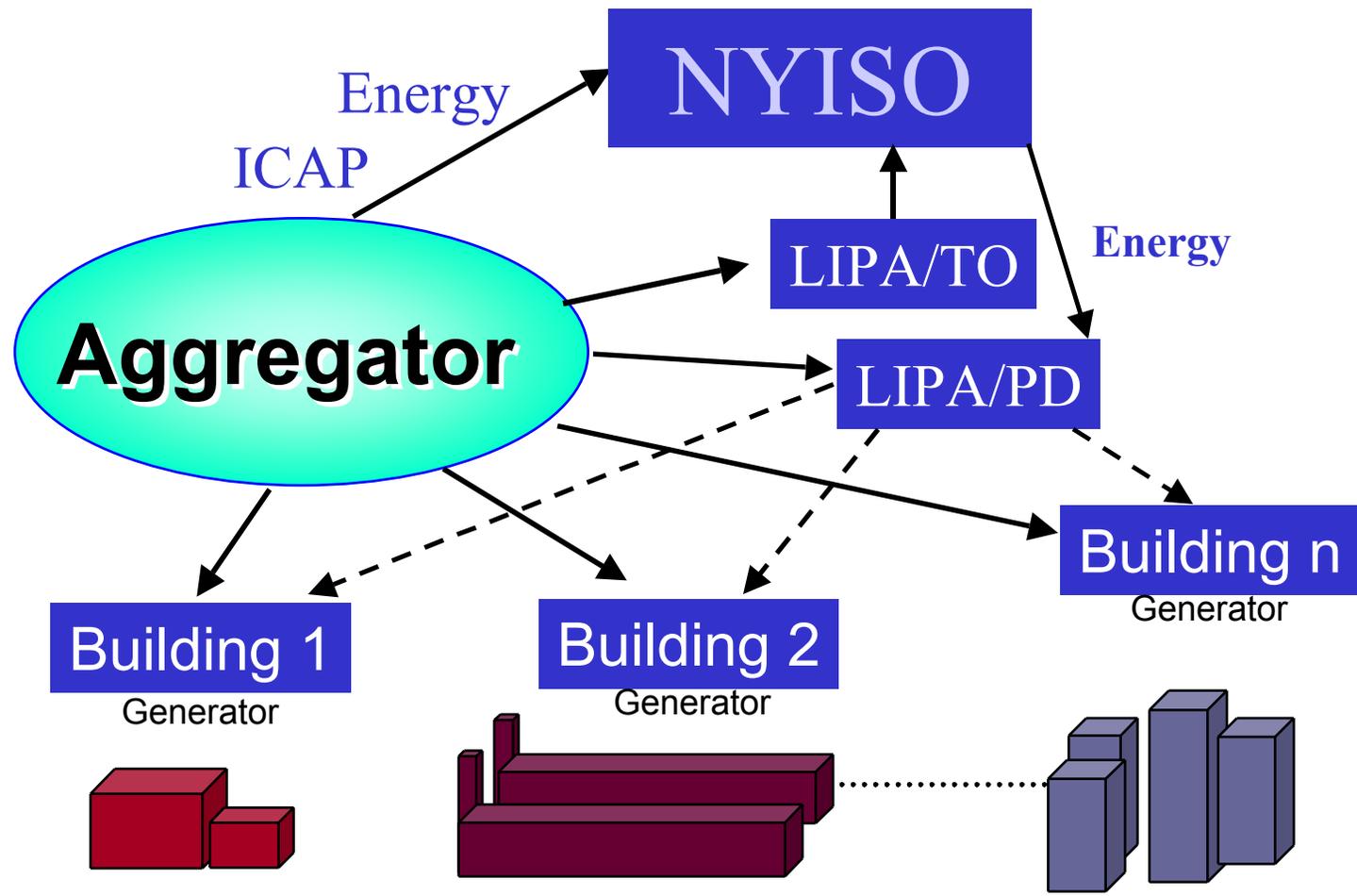
SR ICAP Value (Zone K)= 5.0 MW

- 1) Electrotek has registered the aggregated group as a SR; a first for the NYISO.
- 2) The NYISO recognizes the SR as a generator with a single PTID/location.

Locating Participating DG Locations



Balancing Long Island Supply/Demand

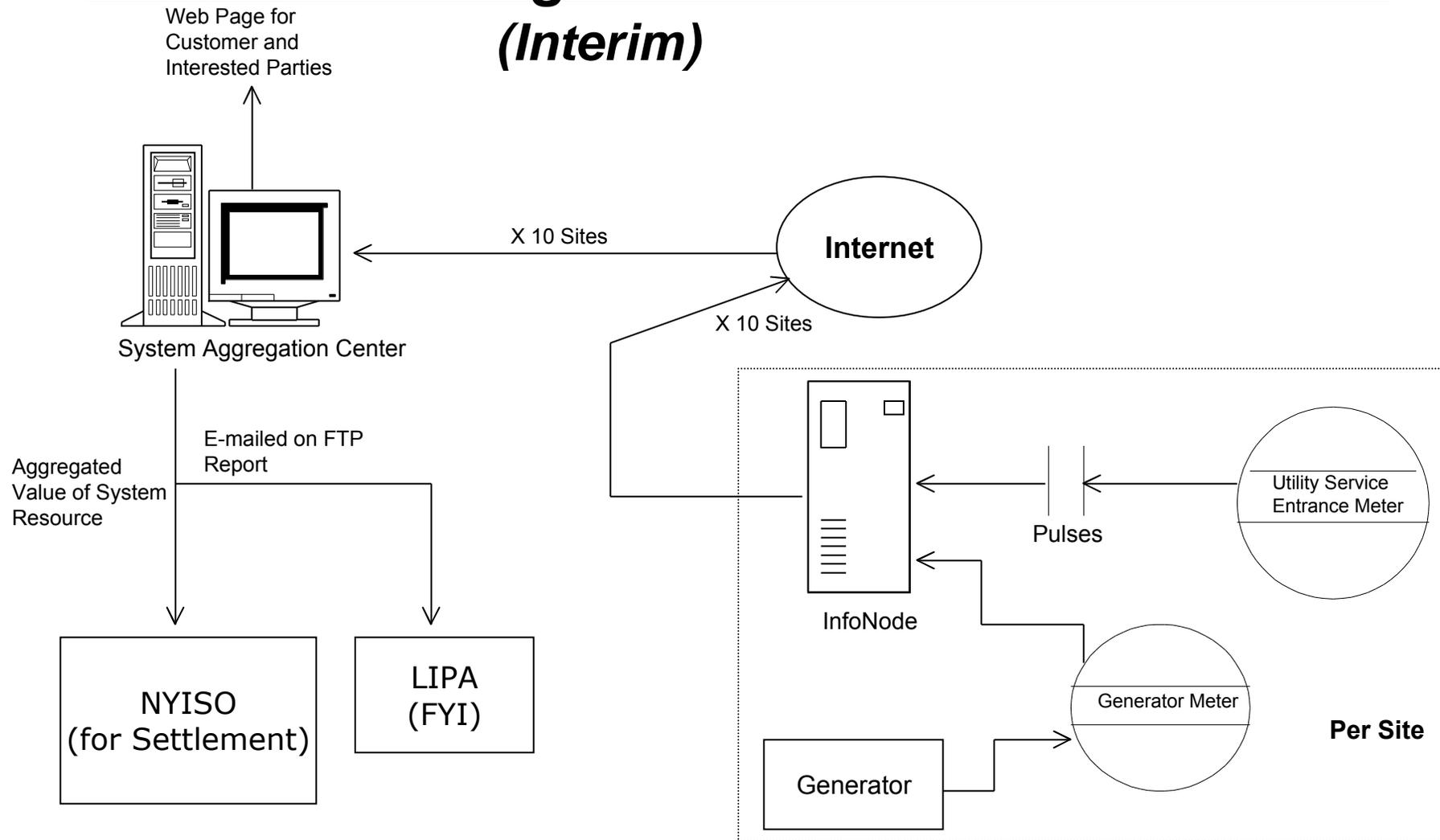


Task 1 (Continued): Communications

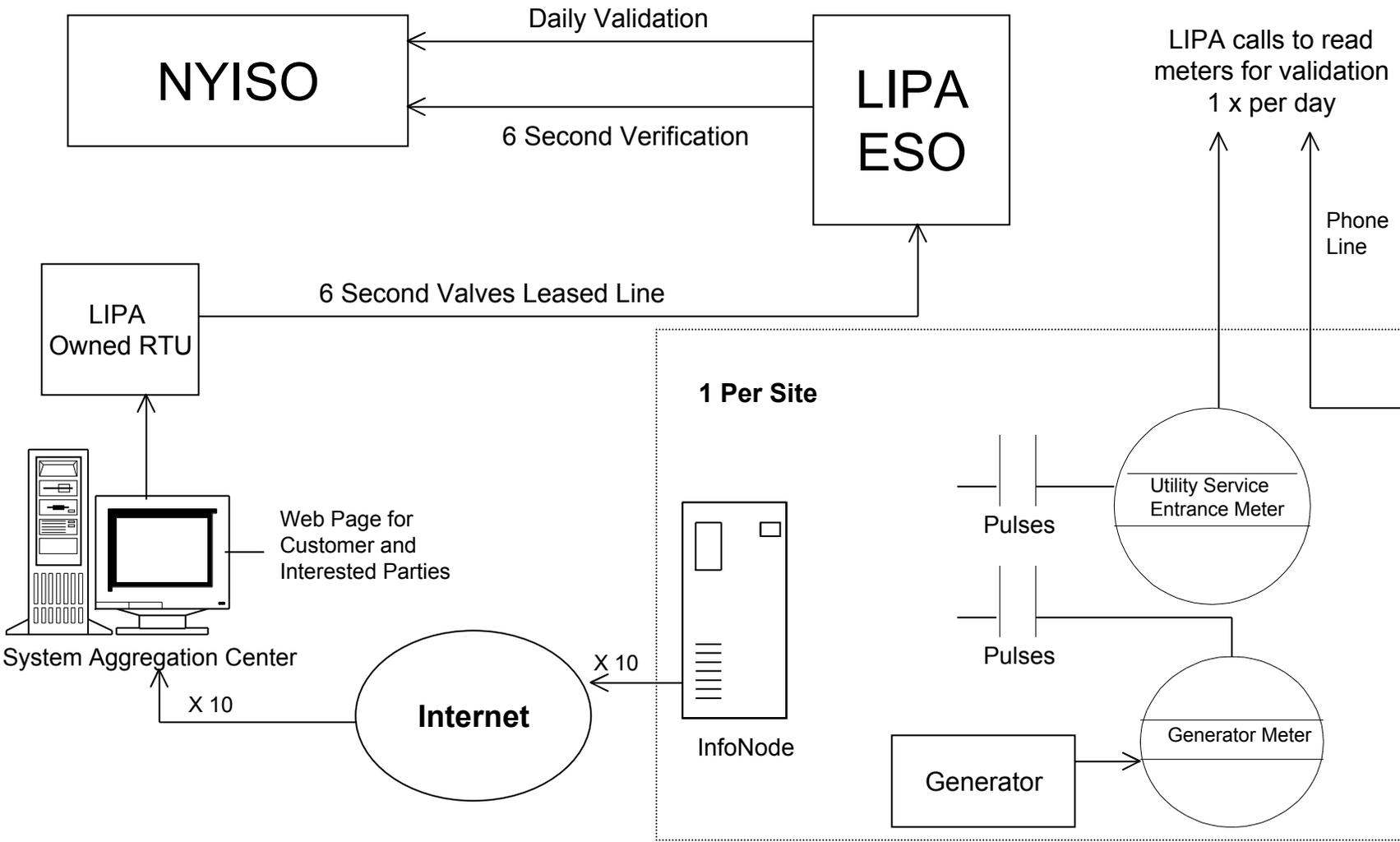
<u>Function</u>	<u>Frequency</u>
Monitor Engines	6 Seconds
Report from TO to NYISO	Daily
Validation	Daily
True-Up	Monthly, Quarterly
Verification (SA – TO – NYISO)	6 Seconds

On-Site Metering/Communications/Control

(Interim)



On-Site Metering/Communications/Control



Status: Task 2

Survey of Backup Units in New York State;

- Estimate 500 MW on LI**
- 3000 MW in NYC**

Recruitment 30MW of DG for Demo

- Already have 30 MW in Zones J&K**
- Plan to expand scope of demo**
 - * To two Zones (J&K)**
 - * To 50 MW**
 - * To include Co-Gen**
 - * To include Parallel Operation in Network Area**

Status: Task 3

Design of Commercial Demonstration

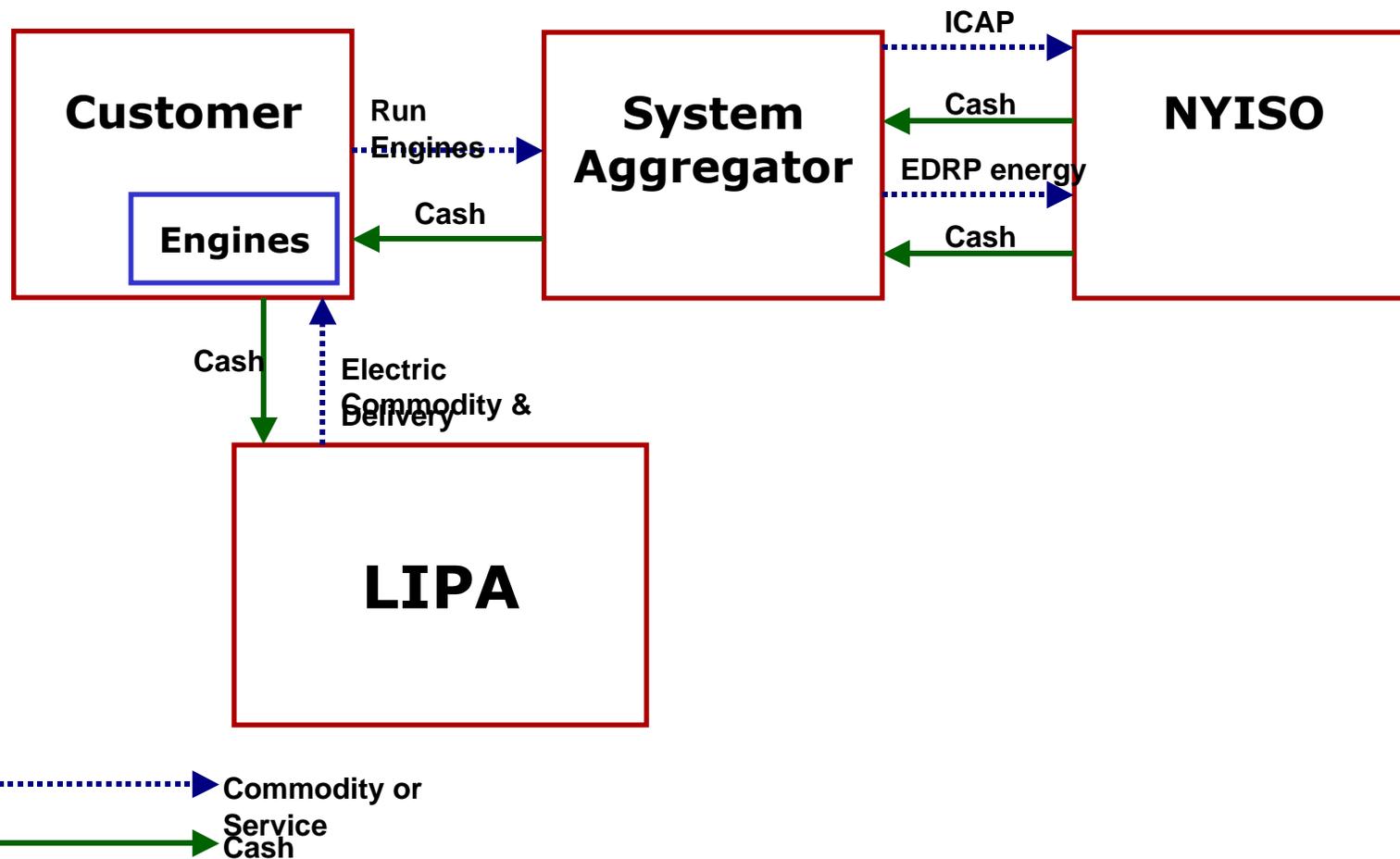
- **Conducting “Shadow Experiment”**
- **Transaction Analysis**
- **Comparing Transactions for**
 - * **SR in Wholesale Market**
 - * **Aggregated Loads in Retail Market**

*Transaction Analyses
for
Aggregated Distributed Generators*

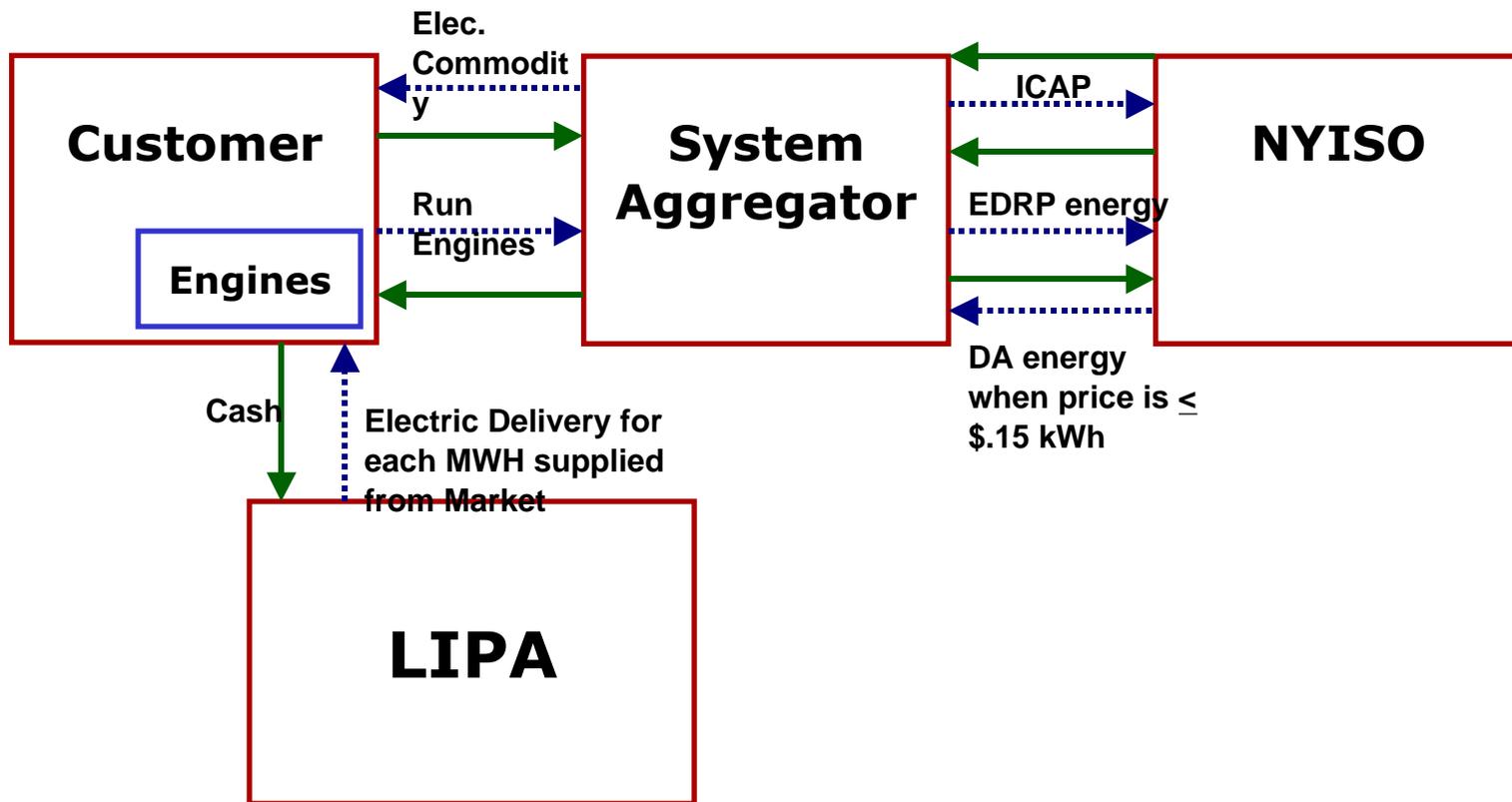
May 23, 2002



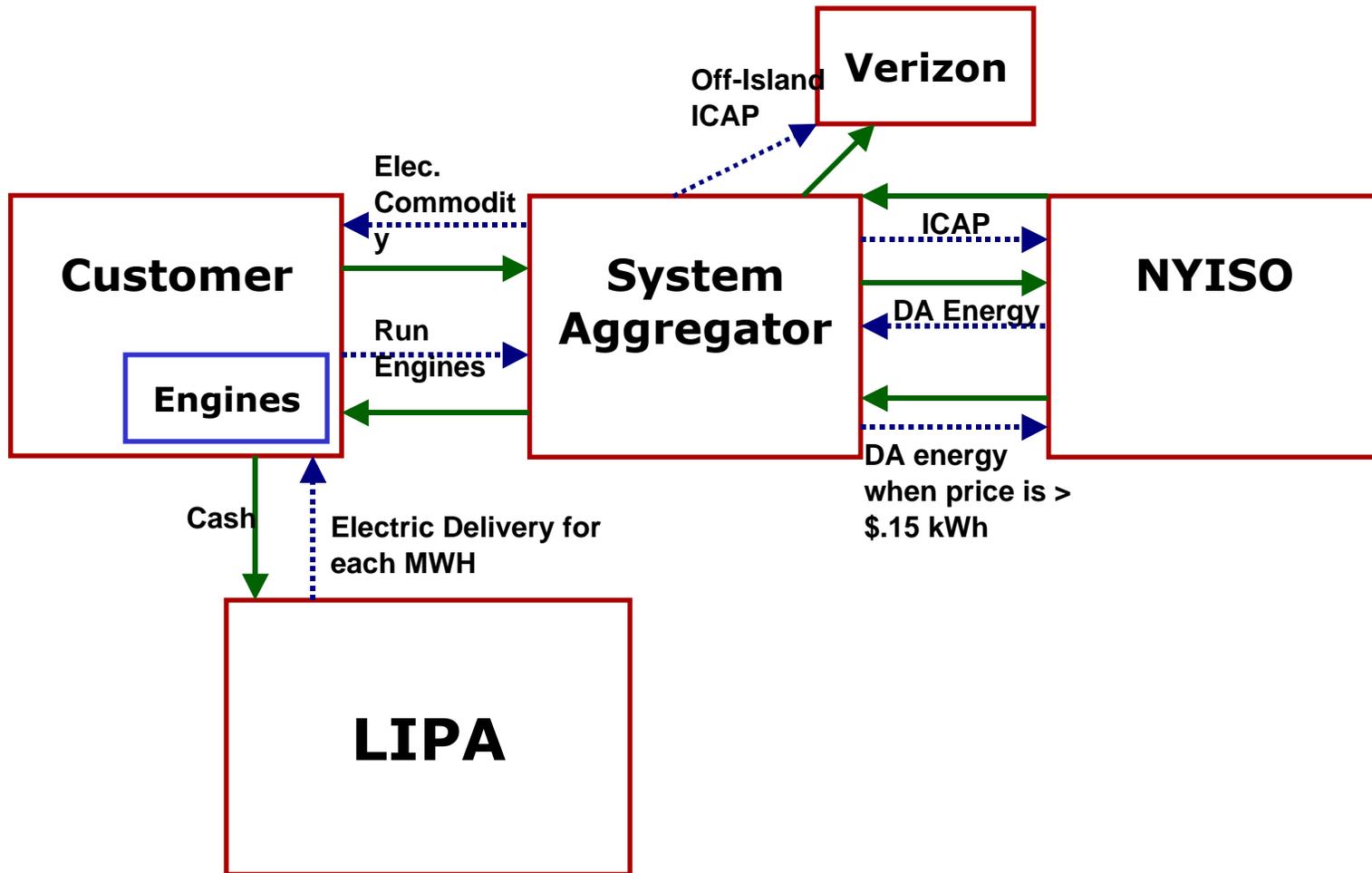
Case 1: BAU (Buy from LIPA and EDRP/SCR)



Case 2: DRC & Run Engines When Prices are High



Case 3: DRC & SR



.....▶ **Commodity or Service**
▶ **Cash**

New York Aggregation Service Center ❖ 19