



**Combined Heat and Power Cogeneration Facilities** 

## **Project Team**

- → Monroe County
- → Siemens Buildings Technologies
- → I.E.C. Engineering, P.C.
- → NYSERDA
- → RG&E
- → Local Contractors/Suppliers



County Executive



## NYSERDA Grants

- → Combined Heat and Power and Renewable Generation Technical Assistance Program
   → Standard Performance Contracting Program
   → Institutional Energy Performance Contracting Program
- → Technical Assistance Program



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# **Project Components**

## → Design/Build

-On site CHP plants (two independent 750 KW natural gas generators)

-New absorption chiller

-Airfield lighting and controls

-Terminal lighting and controls

→ Project facts:

-\$4.2 million project cost

-No cost to County taxpayers or GRIA customers

-No change orders, cooperative team



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22,000 lb. Enclosure



### System Circulating Pumps & HX

### Roof Piping – Metraflex Loop



## **CHP Plant Heat Recovery Chiller**

- ✤ Trane Model ABSC-465 Absorption Chiller
- → Operating as 300 ton unit
- → Entering Hot Water Temperature 227°F
- → Leaving Hot Water
   Temperature 203°F
- → Entering Chilled Water Temperature 56°F
- → Leaving Chilled Water
   Temperature 46°F
- → No New Cooling
   Tower Capacity Required



## **Lighting Enhancements**

- → New lighting with controls have reduced the overall energy consumption of the Airport by 18%.
- $\rightarrow$  That's equivalent to taking over 650,000 less taxi rides.

T-8 technology Occupancy sensors Daylight harvesting



#### **Siemens Airfield Solutions installed new Runway Lighting Controls**

#### Tower personnel can adjust runway light intensity to match weather conditions.



# **Project Objectives**

- 1. Reduce energy and operating costs
- Reduce commercial air carrier cost of doing business at GRIA
- 3. Provide operational flexibility
- 4. Allow operations to continue during power outages (eliminate revenue loss)
- 5. Enhance emergency preparedness



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# **Objective 1. Reduce Energy and Operating Costs**

Year	Total Peak/Off Peak (kWh)	Calculated Savings
0 (Base)	12,201,000	Not Applicable
Projected	6,182,568	\$ 482,482
1 - 2003	4,444,708	\$ 368,341 (short
		by \$ 114,141)
2 (first 5 months)	1,472,140	\$ 228,487 (on
		track)



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# Objective 1. Reduce Energy and Operating Costs Results/Discussion

→ Why did we fall short on Year 1 projections?
→ System vibrations caused numerous problems
→ Note: Still successful - reduced kWh by 50%
→ Year 2 projected savings are on track
→ Savings are on track
→ Currently dealing with utility power voltage fluctuations (34.5 kv incoming, potentially exceeding control set points of +- 10%)



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# Objective 2. Reduce Commercial Air Carrier Cost of Doing Business at GRIA - Results/Discussion

→ Based on Energy Performance Contract Guarantee, savings are realized based on kWh reduction

→Complicated year 2 savings projections through a \$10 million terminal improvement project



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**Objectives 3 and 4.** Provide Operational Flexibility and allow operations to continue during power outages (eliminate revenue loss) - Discussion/Results  $\rightarrow$  Now that vibration issues seem resolved - appears utility power quality may be an issue  $\rightarrow$  In May and June, 2004 utility failures have caused cogen facility failures simultaneously  $\rightarrow$  Compounded issues to deal with during power event +Currently working with utility and Siemens to evaluate current solution (utility and cogen control improvements)



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Objectives 3 and 4. Provide Operational Flexibility and allow operations to continue during power outages (eliminate revenue loss) - Discussion/Results → The Generators have successfully provided power during 3 power outages, including the August 14th blackout.

## August 14th Blackout

**By-The-Numbers** 

2 Canadian Provinces, 3 deaths, 8 U.S. states, 12 airports closed, 23 cases of looting in Ottawa, 100 power plants, 9,266 square miles, 61,800 MW of power lost, 1.5 million Cleveland residents without water, 50 million people, \$4-6 billion in economic activity lost



Monroe County Greater Rochester International Airport Combined Heat and Power Cogeneration Facilities



Maggie Brooks County Executive

## **Objective 5. Enhance Emergency Preparedness**

→ Continues to be our Goal once parallel system reliability is achieved

→ Support standby tariff legislation to allow emergency facilities to be exempt

→ Federal focus on Airports requires GRIA to continue to strive to enhance public safety and security



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