

# Energy Curtailment



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*Powering Business Worldwide*

# Shutdown Checklist

Frequency	Task	Where	Who	Who Tick	Checked by Tick
Year End	Turn off Air conditioning	Production			
Year End	Turn down Heating stat to 16 deg C				
Year End	Check all heaters under desks have been un plugged				
Year End	Check all personnel equipment is un plugged				
Year End	Zip water heater turned off				
Year End	Zip water heater water off				
Year End	Lights Off				
Year End	Fire exits bolted				
Year End	Windows shut				
Year End	Alarm set				
Year End	Door locked				
Year End	Checked by				
Frequency	Task			Where	Who
Year End	Turn off Air conditioning	Main Offices	PH		
Year End	Turn down Heating stat to 16 deg C				
Year End	Check all heaters under desks have been un plugged				
Year End	Check all personnel equipment is un plugged				
Year End	Zip water heater turned off				
Year End	Zip water heater water off				
Year End	Lights Off				
Year End	Fire exits bolted				
Year End	Windows shut				
Year End	Alarm set				
Year End	Door locked				
Year End	Checked by				

# Holiday Checklist

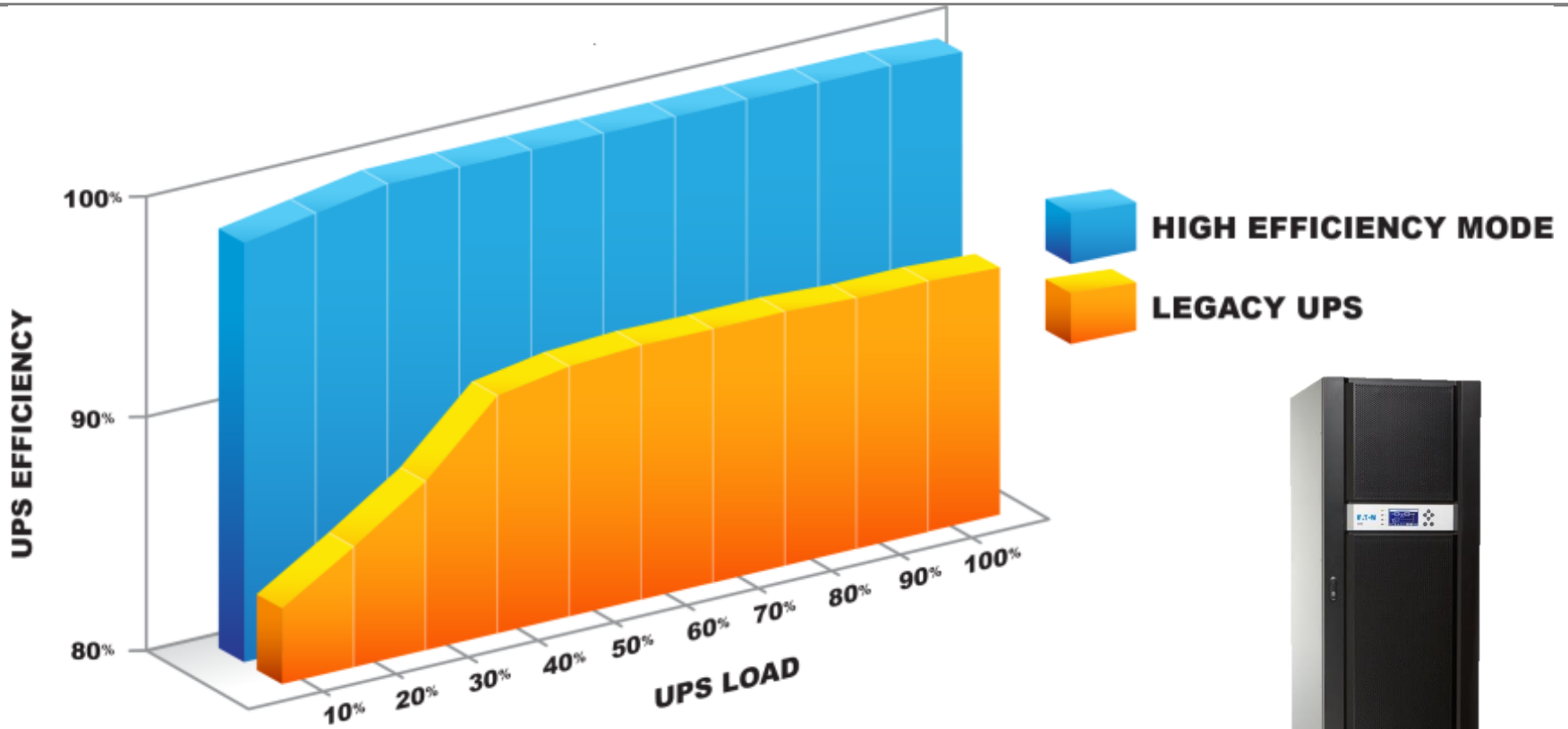
ITEM	LOCATION	Maintenance Checklist		
		Thursday @ 6:30 am	Friday 6:30 am	Saturday
Absolents	Supply	leave on	x	x
	Legacy	leave on	X	X
	AFM	leave on	X	X
	Single Piece	leave on	X	X
Compressors	Sullair Room	assure outer doors are closed and inner are open	X	X
		check each of the drains and assure they are working. If full, manually activate drain. If it again plugs shutdown dryer/compressor if possible and isolate until drain repaired.	x	x
		Assure no water in groundwater remediation sump.	X	x
		Turn-off sullair 3665 and leave gardner deenver compressor running. open by pass valve to allow air into the low pressure system	X	X
		Assure no major air leaks. Isolate devise if there is one and contact maintenance.	X	x
	Kaeser Room	assure outer doors are closed and inner are open	X	X
		turn off all kaesers except one	turn on kaesers one at a time until 80 psi is achieved	X
		check each of the drains and assure they are working. If full manually activate drain. If it again plugs shutdown dryer/compressor if possible until drain repaired.	X	X
		Assure all dryers on	X	X
		assure area temp > 40 degrees (winter only)	X	X
Assure no major air leaks. Isolate devise if there is one and contact maintenance.	X	X		
HVAC	Supply	leave as is	leave as is	leave as is
	Heat Treat	leave as is	leave as is	leave as is
	Legacy	leave as is	leave as is	leave as is
	Offices	leave as is	leave as is	leave as is
	Single piece	leave as is	leave as is	leave as is
	AFM	leave as is	leave as is	leave as is

# Energy Reduction Items for Plant Idling

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- Timers on dock heaters or personal heaters
- Preprogrammed away mode
- Motion sensors (Lights, HVAC)
- Demand sensors (Compressors)
- VFD or Multiple units on boilers, compressors, HVAC
- Economizers (Set to 0%?)
- Energy Saver UPSs
- Office items
  - Take home: Chargers, laptops, person lighting
  - Unplug: Heaters, monitors, lights
- Isolate circuits and panels – power down cubical spaces at the source

# Energy Saver UPS

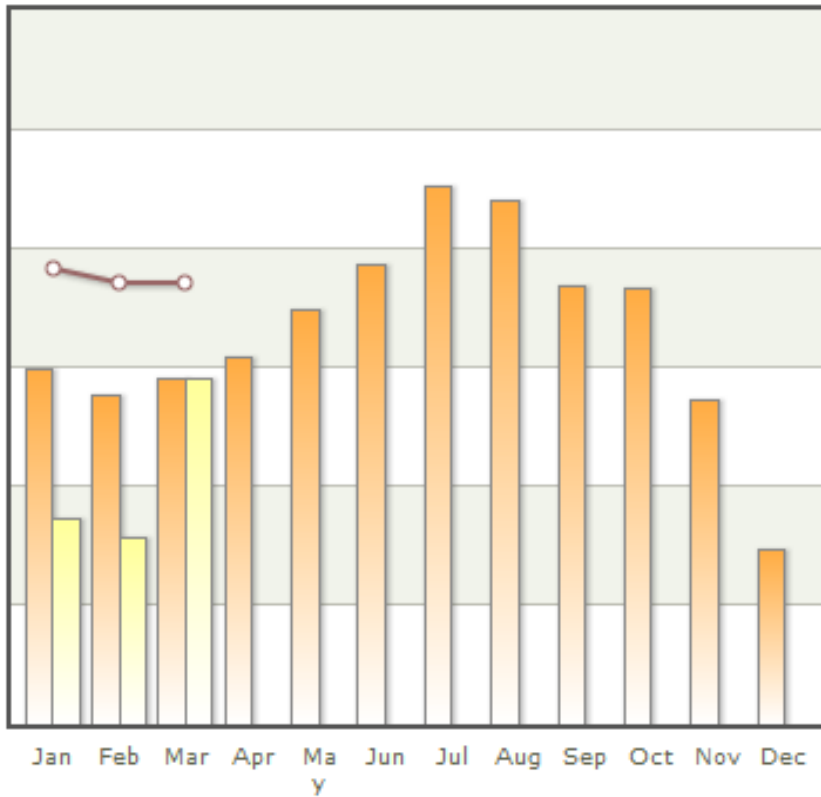


Eaton 93E UPS

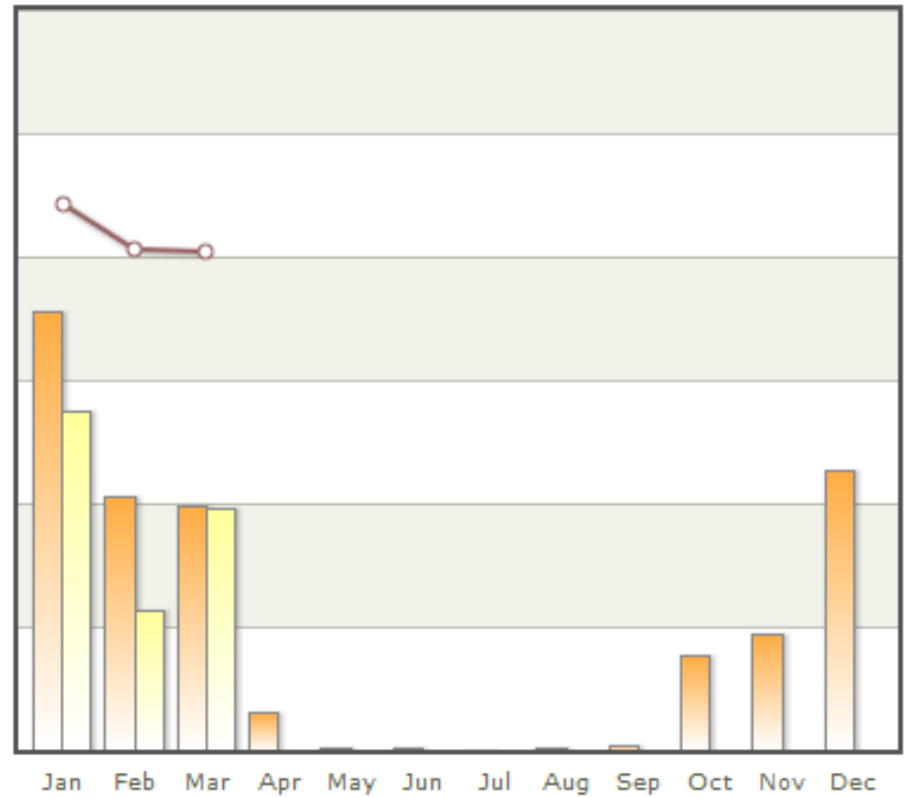
**Up to 98% efficient from 20 to 100% loading**  
**Significant power savings over past UPS designs**

# Energy Tracking per Unit

**Trend Charts**  
Electricity kWh per Month



**Trend Charts**  
Natural Gas therms per Month



# Supplier Energy Contracts (Natural Gas)

Rich Gorzé – Global Energy Manager

## Considerations when significant reduction of Natural Gas occurs...

- Contracts vary ...e.g.. each facility has a specific fixed contract price and volume, understand contract restrictions in cases of Force Majeure or plant shutdowns
- Contract pricing is charged for all volumes used ...typical can be +/- 10% bandwidth on monthly contract volume, can be full requirements or take-or-pay
- Monthly volumes above or below the 10% swing tolerance are charged or credited at a published market rate (possibly NYMEX)
- 'Utility' Operational Flow Order (OFO) - In the event of a OFO called by either PSNC or Piedmont, the utility may determine bandwidth on volumes supplied, based on pipeline restriction, buy-thru's can be expensive....
- OFO's are essentially daily balancing orders issued by the utility to protect their system from either too much gas or not enough gas on critical days. Noncompliance with the OFO's could result in severe penalties.
- Plant Contacts - each of the Operational Contacts should be contacted by email specifying what the OFO entails.
- *Communications are key!* ... If there are circumstances other than the weather that would cause a facility to use more or less natural gas than normal, please contact your natural gas supplier with as much notice as possible, this will help to mitigate possible penalties. .

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