Andrew's Wireless Cabinet Portfolio

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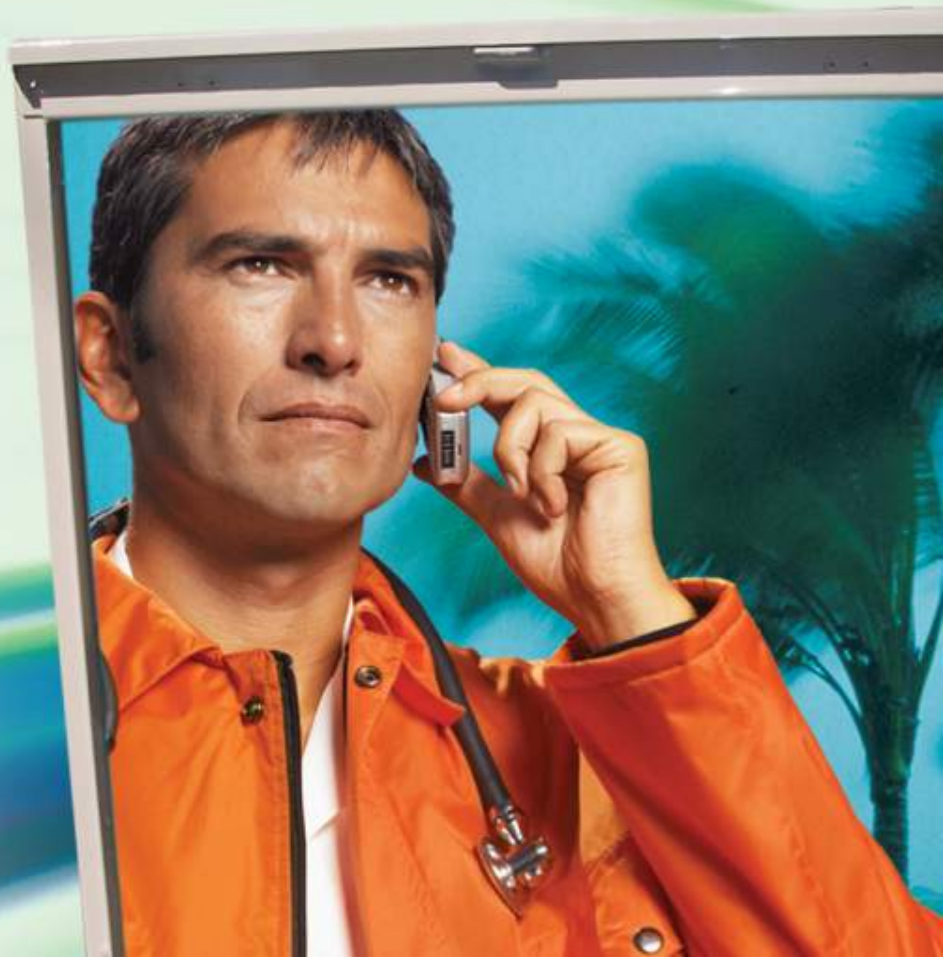
Andrew Cabinets – Value Propositions



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Battery Back-up - Calculating How Many Battery Strings

Calculating amp Hrs

Power draw from all equipment in the configuration, includes equipment, fans	7000	Watts
Divide by voltage either 48 or 24 depending on system	48	Volts
Equals number of amps needed pre hour	146	amps
X		
Multiplied by the Number of hours backup required	8	hrs
Total amps needed to backup system for required hours	1168	amps
amp hr per battery string	170	amp hr
Derating of batteries	0.8	
Number Battery strings needed	9	

Needed to determine how many batteries will be required

Battery Replacement Value Prop for Battery Cabinets

Battery Replacement Savings

By Using the TEC the batteries are maintained at a constant temperature
Per Northstar, batteries maintained at 25 C will last 10 years, without air conditioner battery temperatures can range from 45-50 C, batteries exposed to frequently to 45 C wil have life reduced to 2-3 years

Cost of Batteries Per String	**$1,020**
Number of Strings Per Cabinet	**2**
Total Cost of Batteries	**$2,040**
Number of Years to replace Batteries with Competitive Solution	**3**
Cost of Capital	**10.00%**
PV of battery cost	**3,549**
Data Input	
Savings Transferred back to Quote Tab	

Date: September 14, 2008

Period	Cost of Batteries	Place X in period in which payment is made
September 14, 2008	$ -	
September 14, 2009	$ -	
September 14, 2010	$ -	
September 14, 2011	$ 2,040	x
September 13, 2012	$ -	
September 13, 2013	$ -	
September 13, 2014	$ 2,040	x
September 13, 2015	$ -	
September 12, 2016	$ -	
September 12, 2017	$ 2,040	x

$3549 Savings per site

By using Andrew's TEC technology you can reduce the number of times you have to replace batteries over a ten year period.

Lead acid batteries used in this model

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Power Savings Value Prop's for Battery Cabinets

Basic Power Savings Calculations

Cooling Scheme	Power Consumption	Peak Operating Hours	Peak Power Consumption	Off-Peak Operating Hours	Off-Peak Consumption (kW-Hr)	Peak Cost ($/kW-Hr)	Off-Peak Cost ($/kW-hr)	Year Cost	Place an "X" in System Currently Using	
10,000 BTU Air Conditioner	2,070	4,380	9,067	4,380	9,067	$0.15	$0.10	$2,266.75		$0.00
8,000 BTU Air Conditioner	1,242	4,380	5,440	4,380	5,440	$0.15	$0.10	$1,360.00		$0.00
6,000 BTU Air Conditioner	1,012	4,380	4,433	4,380	4,433	$0.15	$0.10	$1,108.25	x	$1,108.25
Hybrid Cooling: Direct Air for Electronics, 1 TEC for Battery	600	3,286	1,971	4,380	2,628	$0.15	$0.10	$558.45	X	$558.45

10,000 BTU air conditioner run 9.0 amps @ 230 VAC for 2,070 watts
8,000 BTU air conditioner run 5.4 amps @ 230 VAC for 1,242 watts
(3) Maltese fans (135W) and (1) TEC air conditioner (400W) consumes 535 watts. Add the inefficiency of retification, rounded to 600 watts

Power Savings Using Andrew TEC $549.80

Assumes air conditioners are running all the time since no other form of heat tdransfer can occur
Assumes that the combination of the fans and TEC air conditioner effectively runs only 75% of the time during peak hours
Assumes 12-hour splits for peak and off-peak

TEC is DC powered

Total Savings Using TEC $549.80

$550 savings in power consumption per site vs Air Conditioner

If you have 100 sites $55,000 in savings

If you have 250 sites $137,500 in savings

If you have 500 sites $275,000 in savings

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Supply Chain Savings Using RBA Cabinets

Andrew's Integrated Supply Chain Savings:

By using Andrew's complete supply chain management, all materials are procured ahead of production schedule and all components are available when shipment occurs
Carrying cost are calculated by using annual revenue divided inventory turns multiplied by the cost of capital divided by annual cabinets purchased

Revenue per cabinet		$4,500
Average Number of Cabinets Per Month	x	8
Total Monthly Revenue		$37,500
Inventory Turns		9
Average Inventory on Hand		4,167
Annual Rate of Capital		12.00%
Total Cost of Carrying Inventory		$500.00
Per Cabinet Cost of Carrying Inventory		$60.00
Data Input		
Savings Transferred back to Quote Tab		

Supply Chain PO Savings Using RBA Cabinets

PO Savings by Using Andrew's Integrated Supply Chain:

The PO savings shows the amount saved by using Andrew's Integrated Supply Chain:

Cost to create PO and issue a check for Payment	$75
x	
Components supplied by Andrew per cabinet	10
Number of Times PO Place per Month	4
Total Cost of Issuing PO and Writing Check per Month	$3,000
Annual Cost of Issuing PO and Writing Checks	$36,000
Annual Cabinets Purchased	100
Savings on Issuing PO and Writing Checks	$360.00
Data Input	
Savings Transferred back to Quote Tab	

Thermal Testing Savings Using RBA Cabinets

Thermal Testing Savings

This savings is associated with the thermal testing that Andrew is providing

Total Thermal Test Cost	$18,000
Number of Cabinets	100
Thermal Test Savings per Cabinet	$180
Data Input	
Savings Transferred back to Quote Tab	

Seismic Testing Savings Using RBA Cabinets

Seismic Testing Savings

This savings is associated with the seismic testing that Andrew is providing

Total Thermal Test Cost	$15,000
Number of Cabinets	100
Seismeic Test Savings per Cabinet	$150
Data Input	
Savings Transferred back to Quote Tab	

UL Certification Savings Using RBA Cabinets

UL Certification Testing Savings

This savings is associated with the UL certification testing that Andrew is providing

Total Thermal Test Cost	$25,000
Number of Cabinets	100
UL Certification Savings per Cabinet	$250
Data Input	
Savings Transferred back to Quote Tab	

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Design Effort Savings Using RBA Cabinets

Design Effort Savings

This is the time associated with designing, creating drawings, document, creating process flow, programming, creating BOM so that a configuration can be manufactured

Total Hours	2,400
Cost Per Hour	$115
Total Design Effort	$276,000
Number of Cabinets	100
Design Effort Savings per Cabinet	$2,760
Data Input	
Savings Transferred back to Quote Tab	

Installation Savings Using RBA Cabinets

Installation Savings

Andrew's past studies have shown that the RBA cabinet takes less time to install that other cabinets

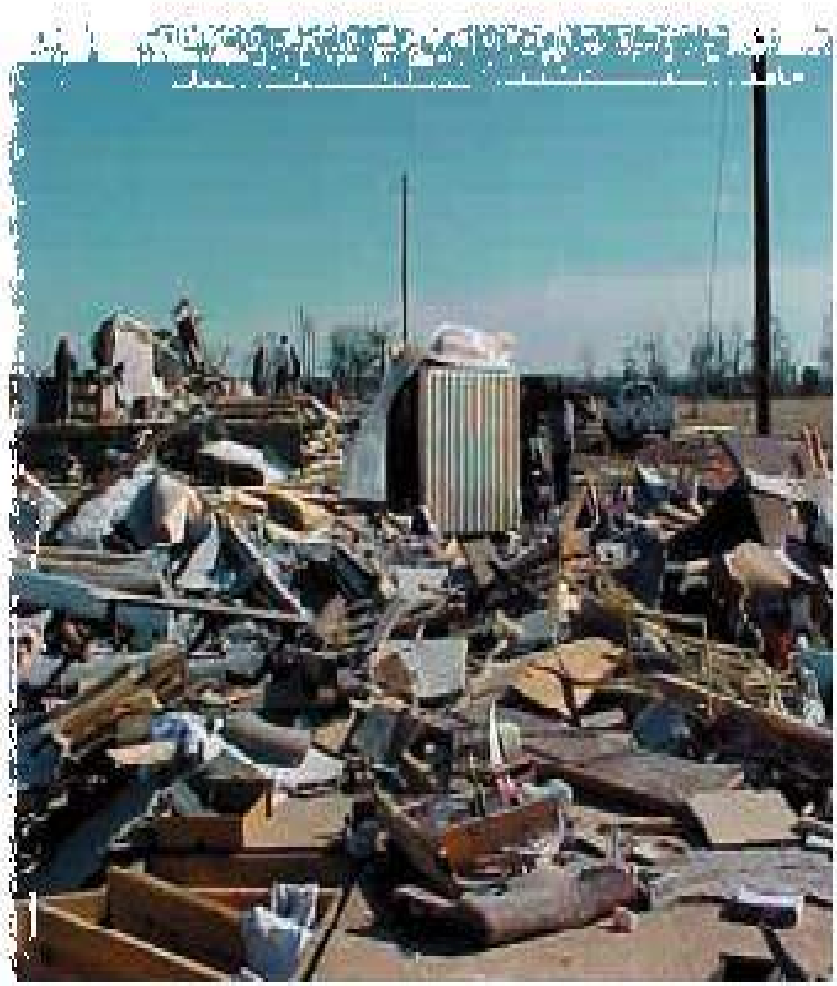
Andrew Time to Install in Hrs	0.75
Other Cabients Time to Install in Hrs	1.50
Difference in Time	0.75
Rate Per Hour	$150
Installation Savings per Cabinet	$113
Data Input	
Savings Transferred back to Quote Tab	

Savings Using Fuel vs Battery vs Generator Back-up

ANALYSIS OF ANDREW'S FUEL CELL VS GENERATOR / BATTERY BACKUP SOLUTIONS
Review of a Ten Year Period

	8kW Fuel Cell	8 kW Generator System	8 kW Battery System
Number Leasee per site	4	4	4
Amount of Power (Watts)	8,000	8,000	8,000
kW used per leasee	2,000	2,000	2,000
System Cost	$33,223	$8,000	$13,200
Hydrogen Storage Cabinet	$4,602		Initial Batteries
Rental H filled cylinders	$20		
Battery Cabinet Cost	$0	$3,800	$3,800
# Batt Cabs req	0	3	3
Battery Cost 100 amp Hr	$1,200.00	$1,200.00	$1,200.00
# Number of strings required	1	11	11
Batteries replaced in 10 yr	1	3	3
$ replace and Dispose bat	$0	$200.00	$200.00
Yrly maintenance Generators	$0	$2,000.00	$0
Yearly maintenance batteries	$0	$1,000.00	$1,000.00
Outages per year	5	5	5
Length of outage in hours	4	4	4
Battery Run Time		2	4
Diesel Run Time		2	
Cost of Diesel per gallon		$5.00	
Gallons per hour		1	
Total cost per outage	$80	$10.00	
Noise emmission	up to 65 dBa	up to 65 dBa	75 dBa
Environmentally friendly	Water	Lead Acid Disposal	CO Emissions
Amount of space occupied	30 sq ft	35.35 sq ft	19.35. sq ft
10 Yr Cost of Ownership	$39,525	$89,650	$74,800
Savings Using Fuel Cell		$50,125	$35,275
% Savings Using Fuel Cell:		55.91%	47.16%

Plan for the Unexpected w/ Reliable Andrew Cabinets



In an uncertain world, your decision can minimize disaster

THE TORNADO struck nine days before Christmas, 2000. In minutes it claimed 12 lives, one a child whose photograph was later found in a field 160 miles away.

Classified as an F4 storm (5 is the worst), the tornado plowed a half-mile-wide furrow across 11 counties. Winds of up to 260 mph (418 kph) flattened 75 homes, demolished 60 buildings, and left telephone service – intact.

Surrounded by the wreckage of pulverized homes, an Andrew enclosure kept equipment functioning reliably, during and after the storm.

A fluke? The catastrophe that struck Gadsden, Alabama may have seemed so. But the performance of this Andrew equipment enclosure wasn't. It was designed and tested to survive six of the most challenging scenarios your network equipment may ever face – fire, flood, earthquake, hurricane, the evolution of technology and the constraint of your budget

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Advanced eco-friendly technologies