HVAC System
Case Study

η-Power Solutions
Pima Controls Pvt. Ltd.

Case Study – 100HP Air Handling Unit

Occupancy Schedule

Time of the Day (Hours)	0000 - 0600	0600 - 0800	0800 - 1200	1200 - 1300	1300 - 1700	1700 - 2000	2000 - 2400
Occupancy % Wk days	0	20	95	45	95	20	5
Occupancy % Wk ends	0	5	10	10	10	10	5

Make up Air Handling Unit

Source: Ralph J Ferraro, PE - Ferraro, Oliver and Associates, Inc.
Andrew Jackson Building - Nashville, TN VFD Evaluation

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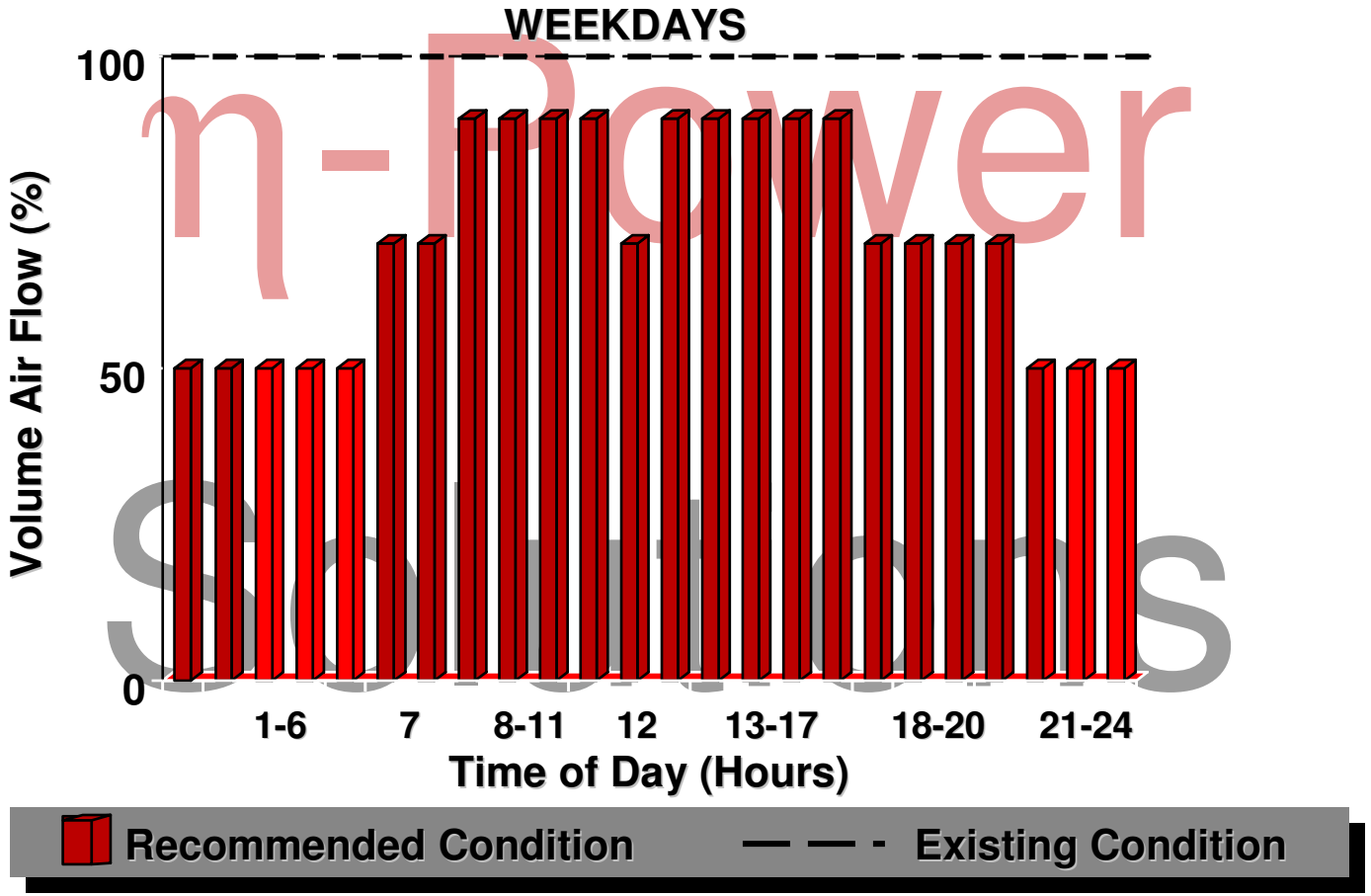
Recommended Air Volume



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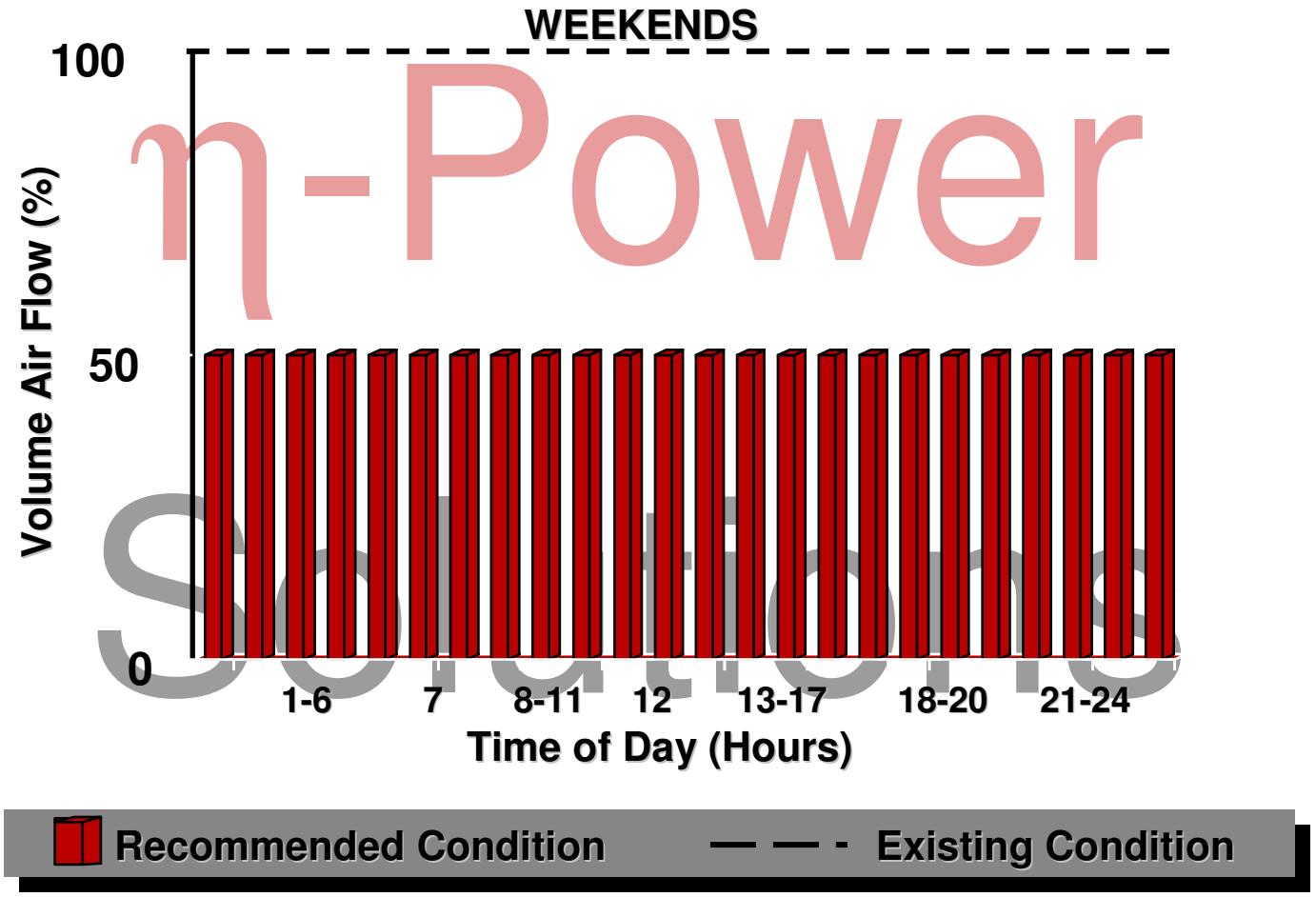
Recommended Air Volume



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Total energy cost savings

= (Present cooling energy cost + present heating energy cost + present electricity cost) - (Post VFD implementation cooling energy cost + heating energy cost + electricity cost)

= ($71,186 + $45,490 + $27,577) - ($23,357 + $14,934 + $12,310)

= $144,253 - $50,601 = **$93,652**

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Andrew Jackson Building - Nashville, TN VFD Evaluation

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Estimated Total Building Energy savings

Electrical.....439,776 KWh/year

Chilled Water.....434,810 Ton-hr/yr

Steam.....3,055,671 lbs/yr

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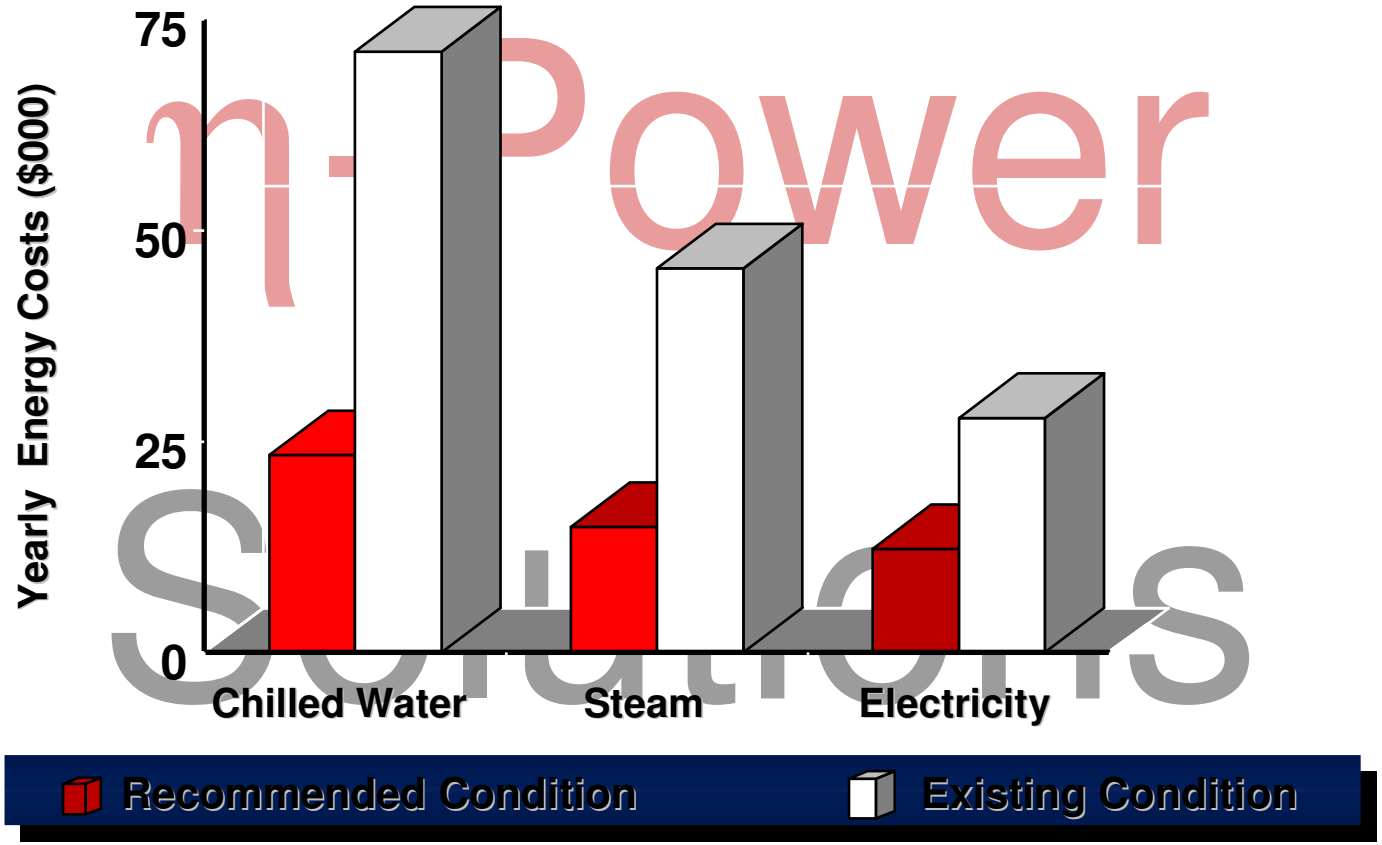
Estimated Total Building Energy Savings



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Payback For The System

- Straight-line payback = (construction cost) / (annual energy cost savings)
  - 100 hp electronic 12 Pulse VFD @ $25,000
  - 100 hp installation cost @.....$20,000
  - Engineering design cost @.....$15,000
    w/installation specs, layout, & interconnection drawings

Straight-line payback = $60,000/$93,652 = **0.64 years**

NOTE: Standard VFD w/ 6 Pulse Rectifier lowers hardware cost to $15,000 and reduces payback to 0.53 years

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Andrew Jackson Building - Nashville, TN VFD Evaluation

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