Reducing energy usage by 56% with application-aware power management.

Aa


THE AMAZING
SPIDER-MAN


Gnomeo
& Juliet

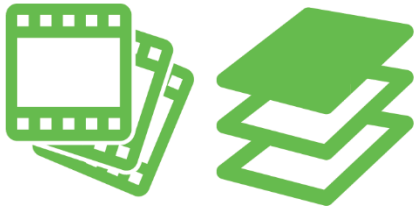

Barbie
Life in the Dreamhouse

Behind the scenes

Asset creation and assembly requires high performance computing power

00:00:01

1 second of standard footage



24 frames a second with multiple layers

Hours … Days to render

Arc Productions™ Animation & Visual Effects

TSO logic

The business side

- Margins are tight, competition is intense
- Winning business is tied to turnaround
- Reducing costs gives us a competitive advantage
- Uptime and performance is crucial

Data center overview

6,500
Cores

800 sq ft

2 Chillers

3 Staff

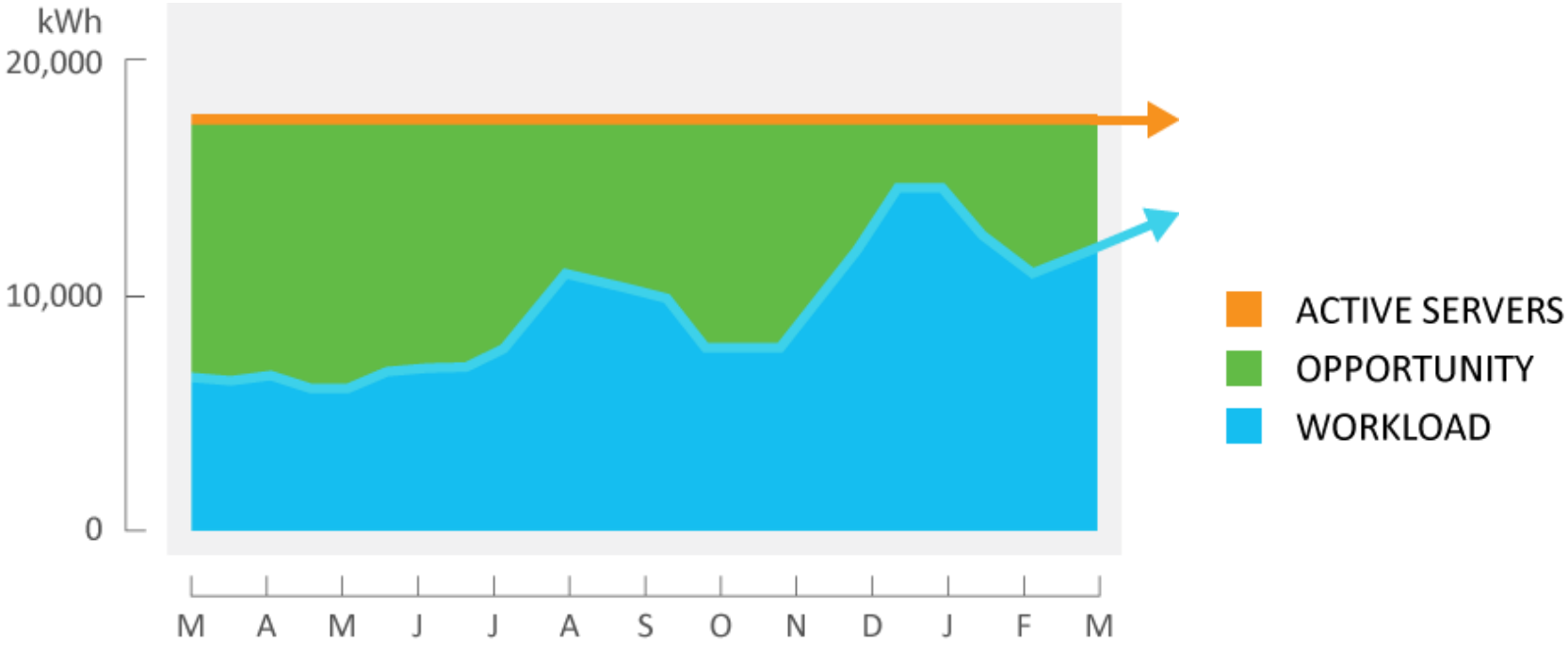
Kwh/month: ~120,000
Power costs/month: $30-$35,000
Cents/kWh: $0.10

Peak demand thresholds were increasing.

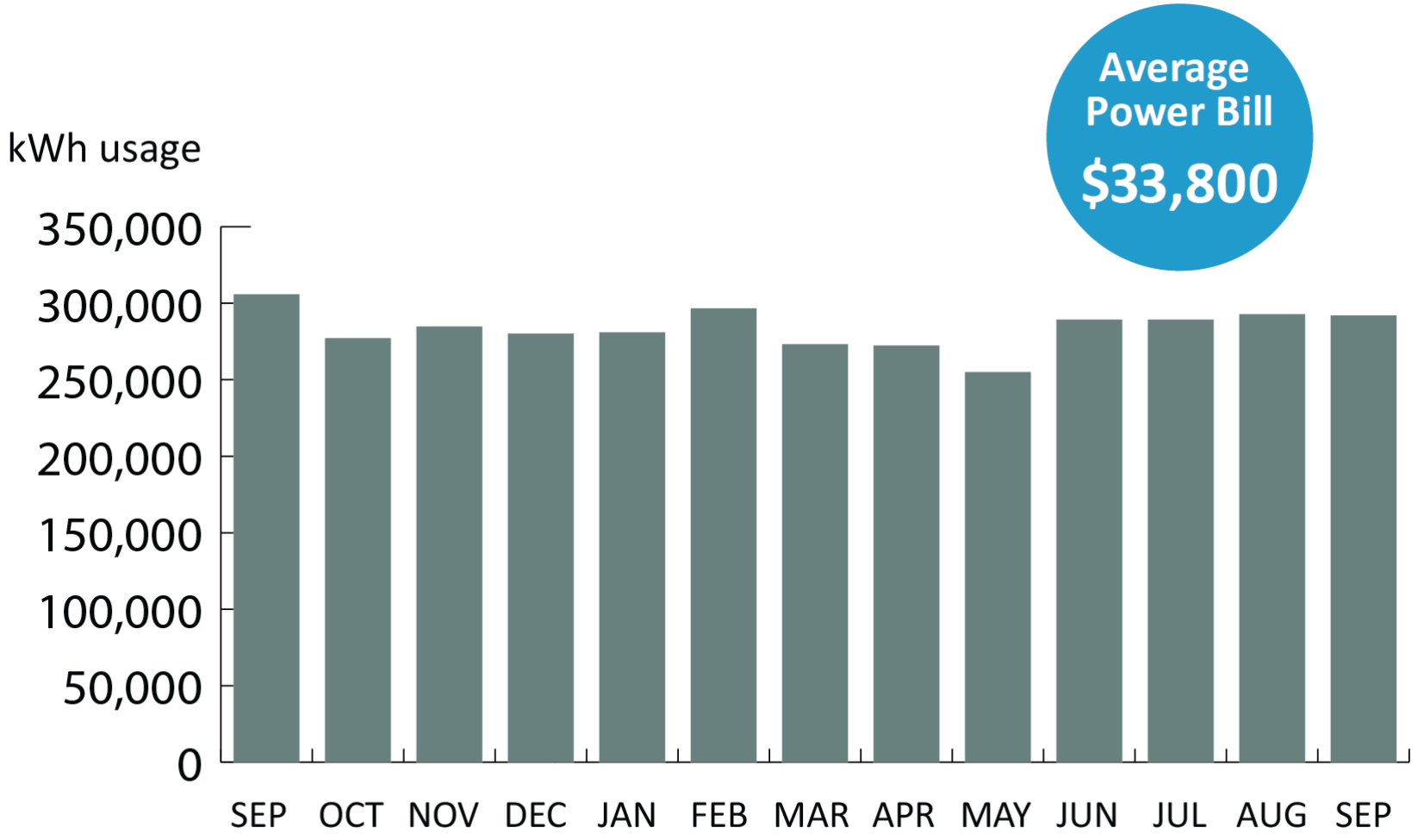
Arc Productions™ Animation & Visual Effects

TSO logic

The problem we saw



Power bill overview - 2013



Finding a solution

Goal was to find a solution that could:

- Provide insight into our energy efficiency and application performance
- Reduce power costs and emissions from idle servers
- Better understand capacity needs and improve our ability to provision
- Gather insight into power costs at the application level
- Show us how and where our power was used

What we didn’t want

- Negatively impact our animators
- Costly changes to infrastructure or equipment
- On-off power control based on “predictions” in workload

Where we landed

Application-Aware Power Management™

Presented capabilities

Data collection

- Performance metrics
- Application-level metrics – per job or application
- Power draw and related costs

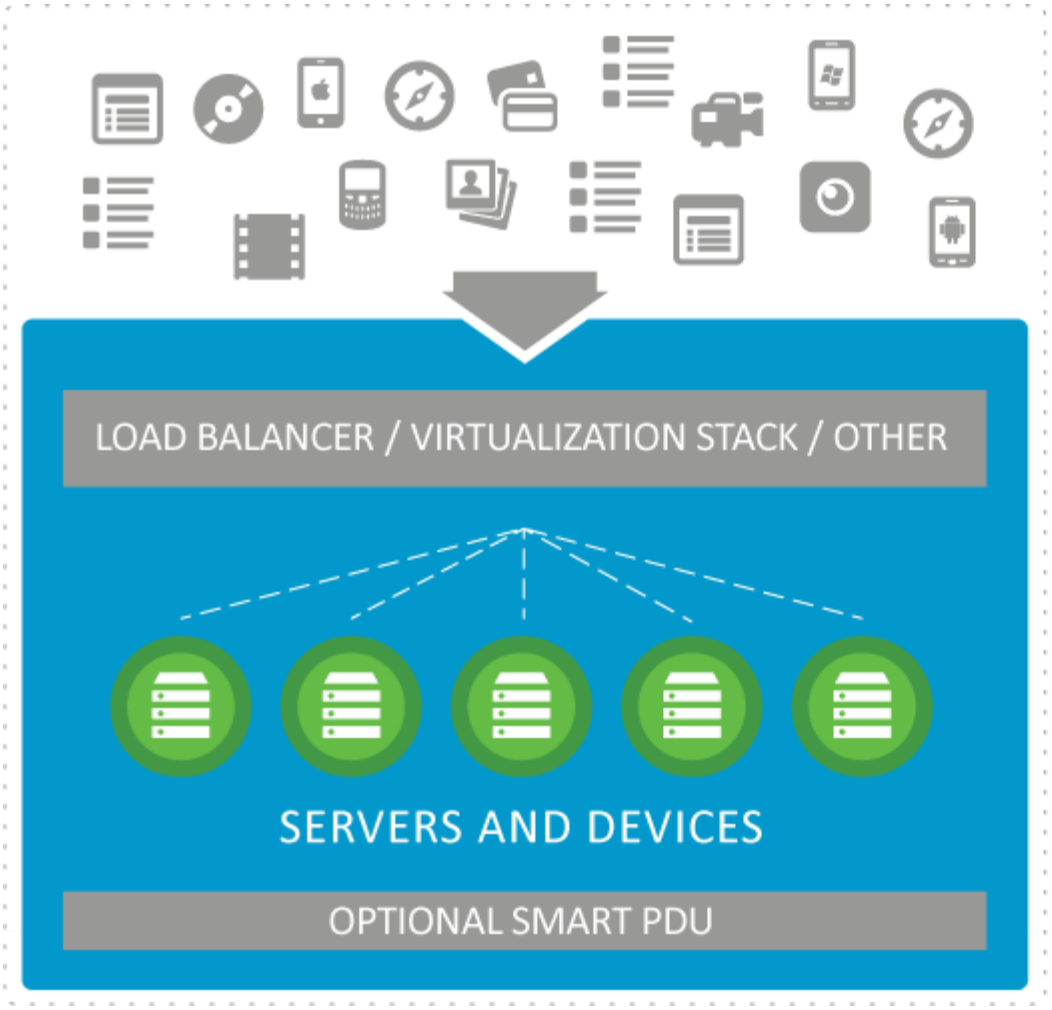
Power controls

- Based on actual workload

Additional

- Savings with no impacts to users
- Easy to install
- Qualified for utility rebates

How we integrated



TSO logic

Phase one – measure

Gathered application-level insight into workload, performance, wasted energy, and potential cost savings.

Findings

- Average server utilization was 36%

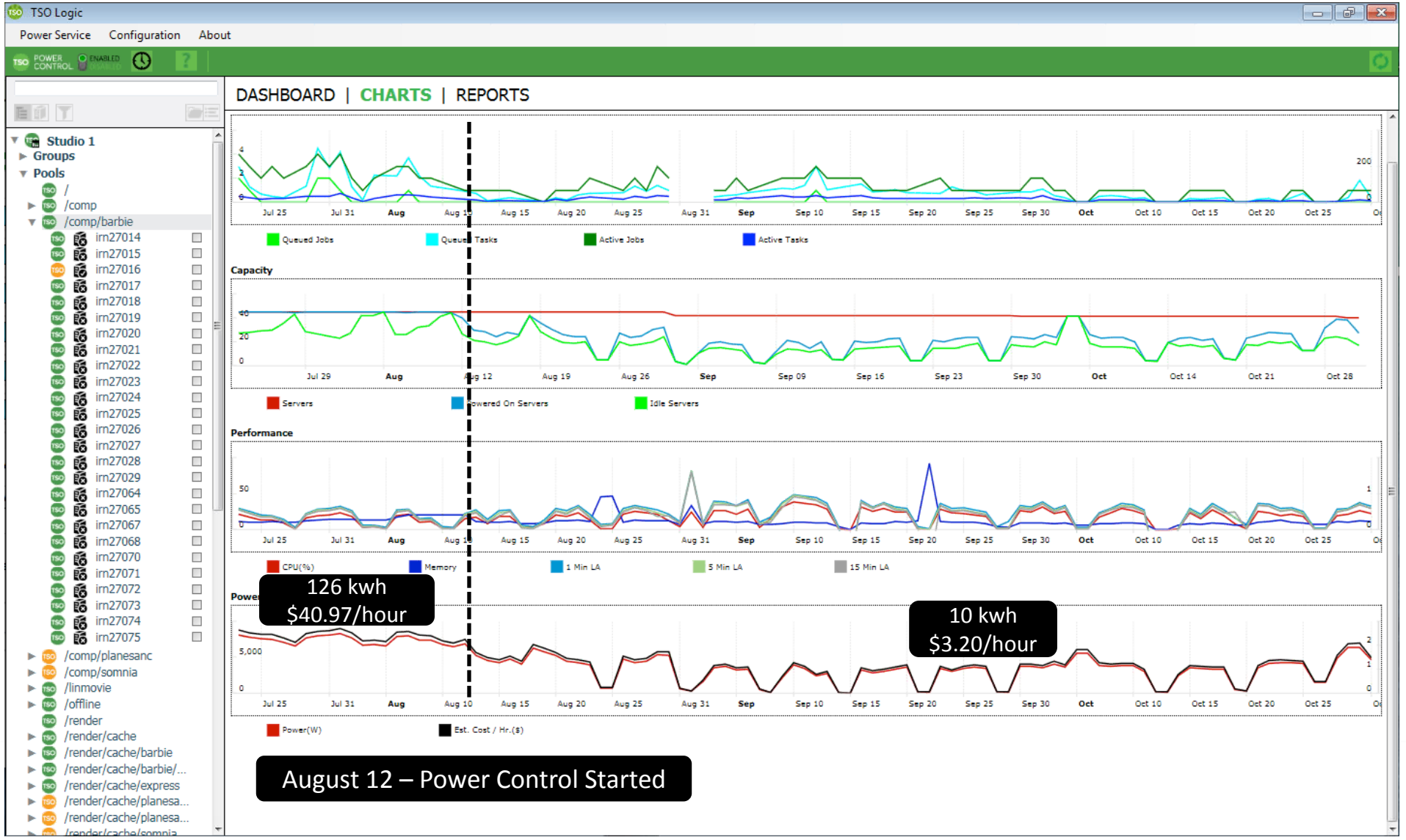
  Ranged from 0% to 77%
- 50% of servers were completely idle 69% of the time
- Idle servers were responsible for 56% of all electricity consumed by our whole farm
- Identified underperforming legacy servers
- Learned the true cost of individual transactions and projects

56%
of electricity is consumed by idle servers.

Phase two: power control

- Quickly reduced server power costs by 56%
- Did not impact performance or users
- Fine-tuned control of where, when and how aggressively we wanted to power control

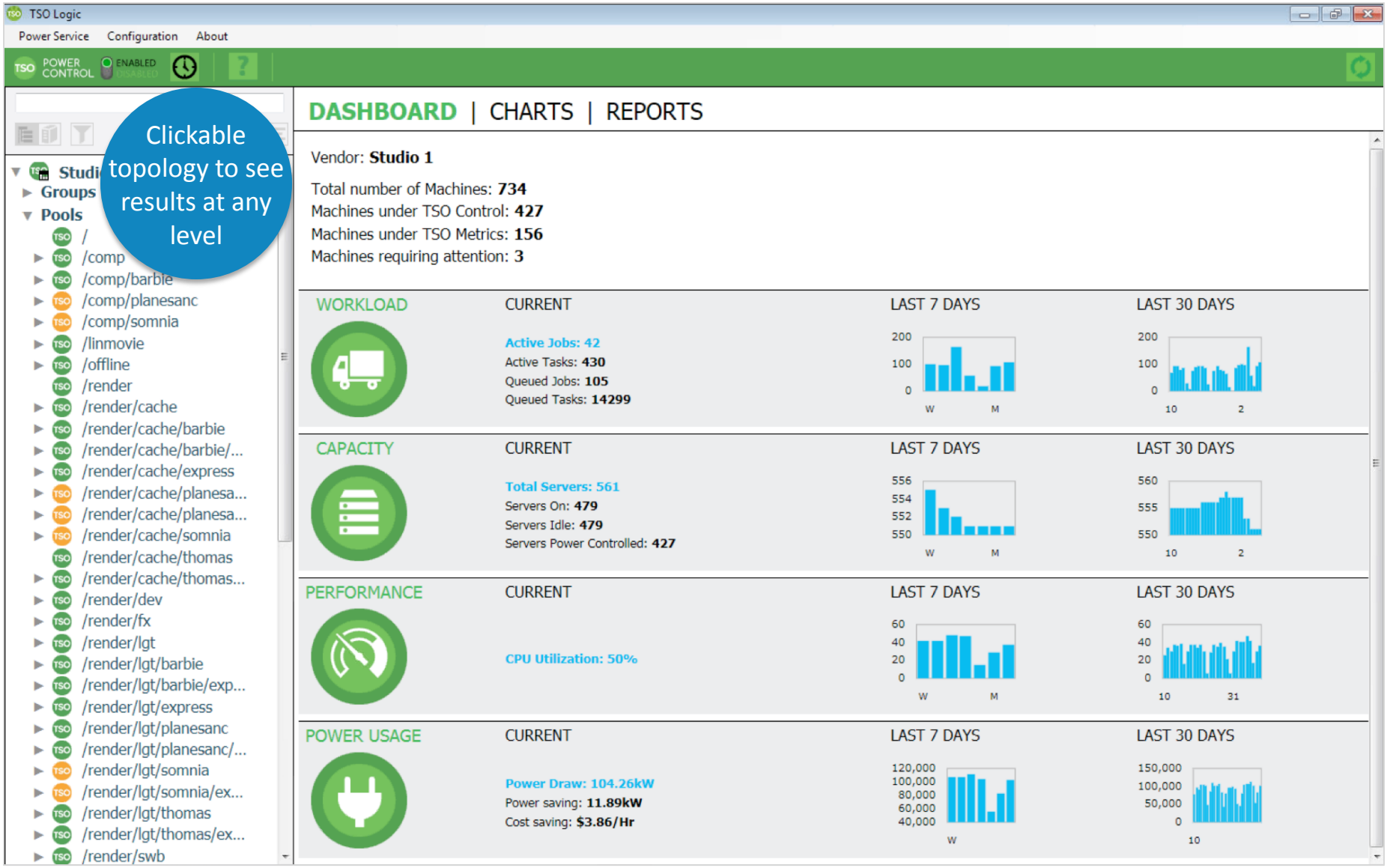
Dashboard – July 22 to Oct 31, 2013



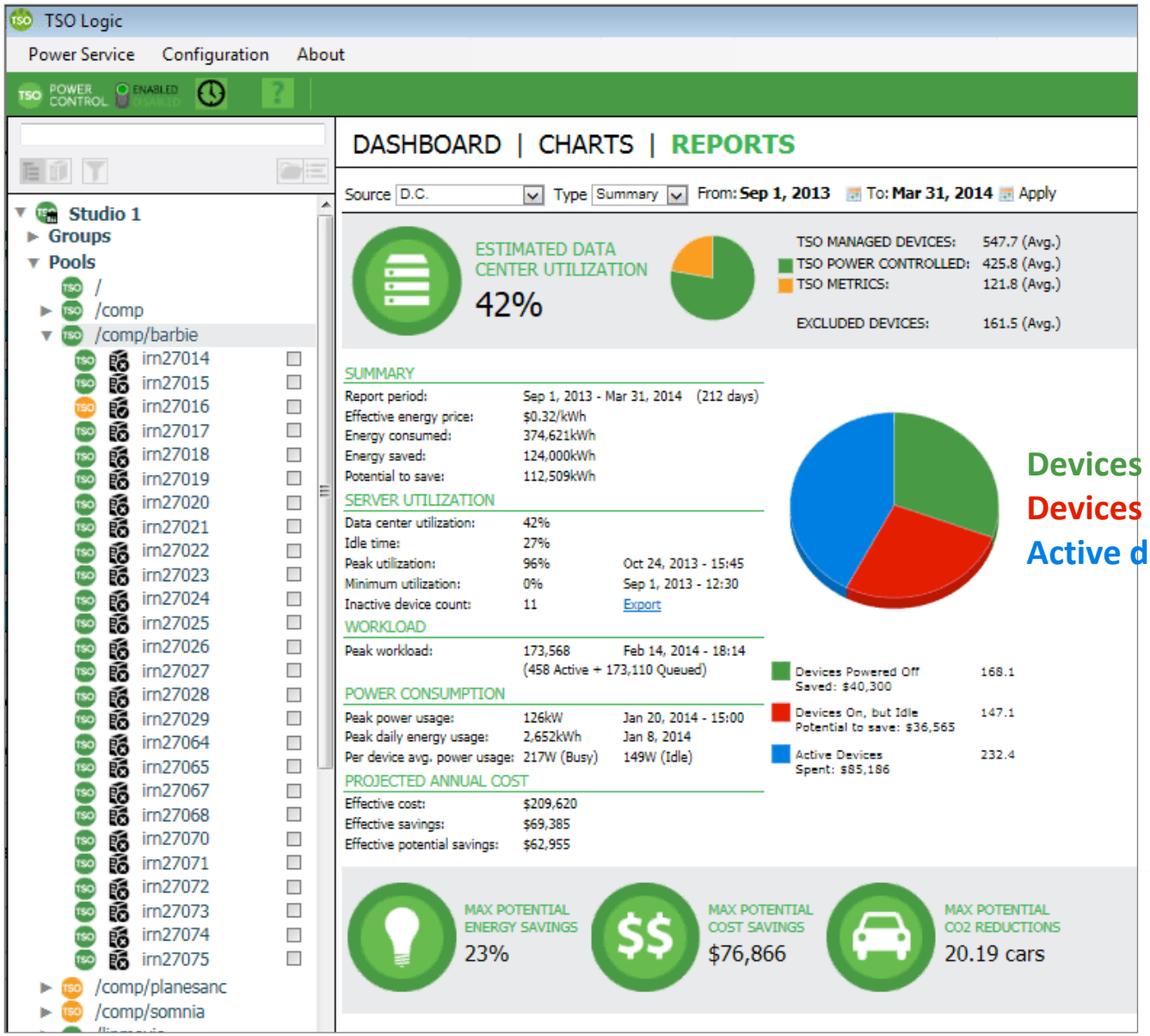
In addition

- **Strategic load shifting:** ability to defer non critical applications to take advantage of cheaper power rates
- **Smart upgrades:** software identified underperforming legacy servers. New servers improved capacity by 400%
- **Planning edge:** valuable metrics for service costing

Real-time dashboard



An overview of our environment



Devices powered off

Devices on, but idle

Active devices

Saveonenergy.ca – Ontario Hydro

As part of utilities energy saving incentive program, we were reimbursed for 50% of the total project costs for software.

The savings from TSO Logic's power control software more than covered the remaining costs.

Additional features

- Power costing per job
- Performance levels for software and hardware
- Compare kWh transactions by server or job
- Invisible to animators and producers
- No additional hardware, agent software or changes to infrastructure
- Easily managed
- Power control is based on our comfort levels

New insights and savings

Detailed metrics and savings we never had the ability to collect before TSO Logic.

Estimated Energy Savings

622 servers

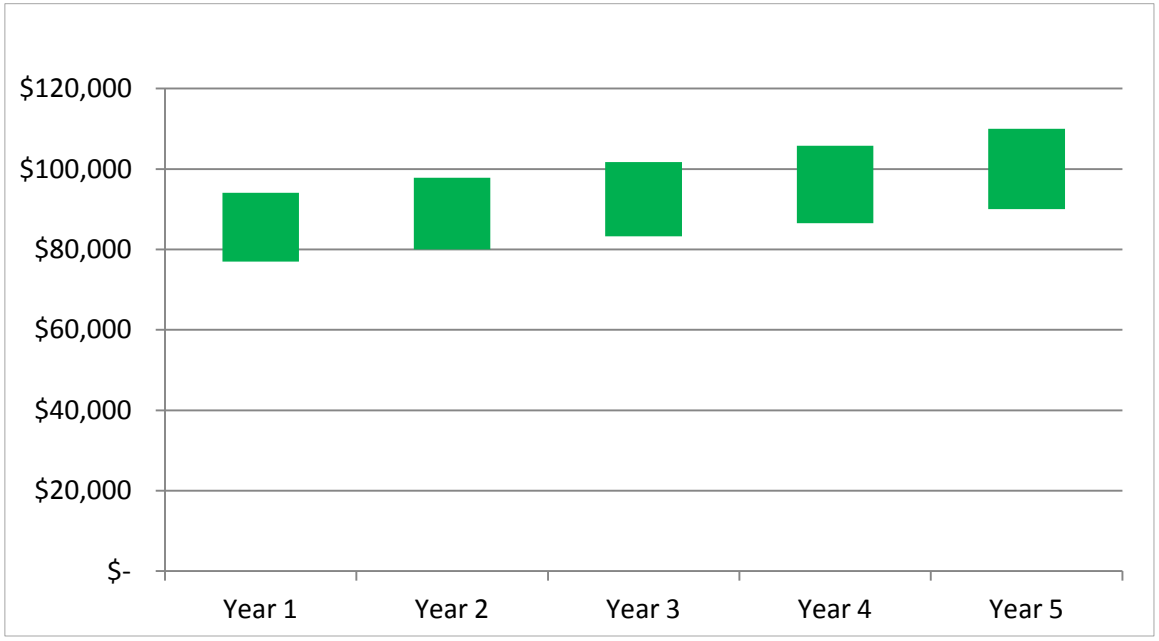
145W at idle

4% Projected annual power increase

10c/kWh

44% Data centre utilization

1.8 Power usage effectiveness



5-year savings $$$

$463K to $596K

Questions

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