

# Data Center Planning

## Developing a Successful Business Case

Christopher Elliott  
Principal Consultant

Russell Kurtz  
Principal

Tim Moon  
Principal Consultant

**CS**Technology



DatacenterDynamics

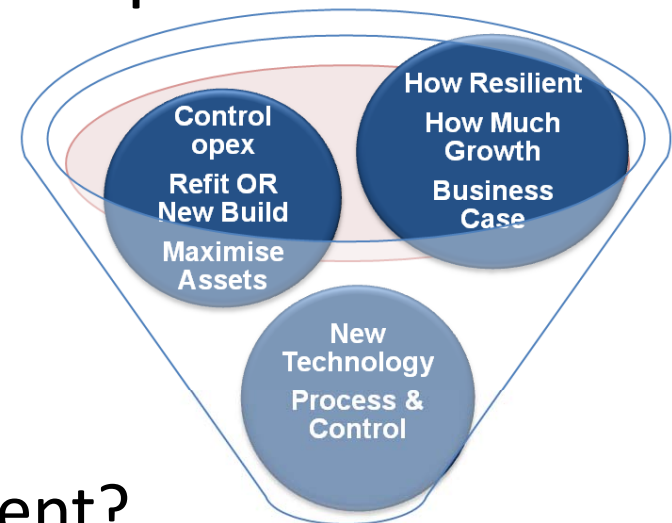
NEW YORK

2009

# Houston, we have a problem ...

Understanding the source of your pain:

- Capacity constraints?
- Risk?
- Budgetary pressures?
- Real estate portfolio realignment?
- Merger, acquisition, & divestiture activity?



# Realities You Cannot Ignore

- An effective business case must be driven by a clear business need
  - Data center changes or improvements need a clear link to a business need
- Financials drive the path of the business case
  - Economy of increasing uncertainty
  - Unprecedented OPEX and CAPEX increases in data center
  - Data center programs compete with business initiatives for critical sponsorship, attention, and capital
- Demonstrate a burning platform
  - Present a compelling case that demonstrates the status quo endangers or limits the business operations

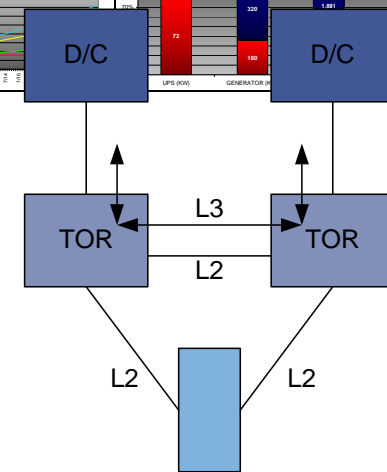
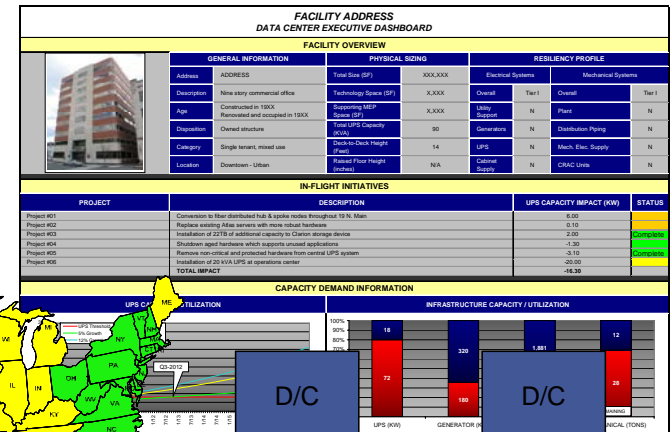
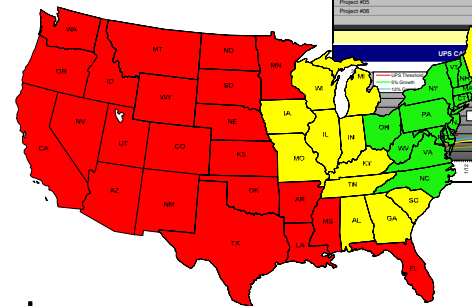


# Current State Assessment

– Holistic scrutiny of your existing data center and technology portfolio to understand the following:

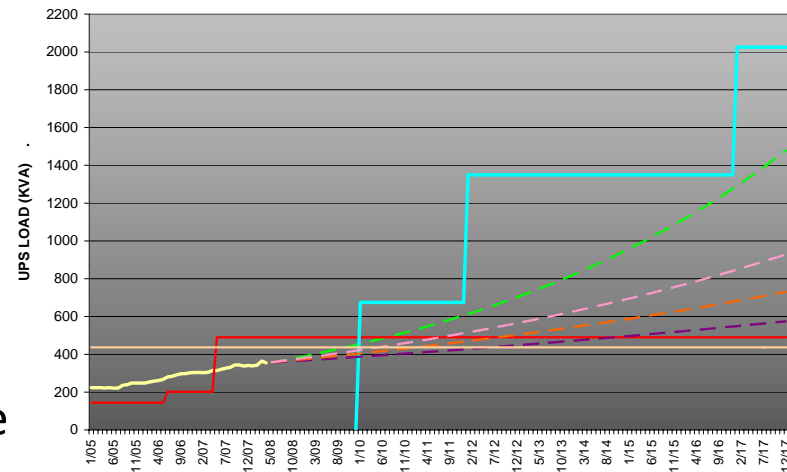
- Facility Risk / Resilience Profile
- Facility Capacities
- Real Estate Considerations
- IT Hosting Topologies
- IT Operating Models
- Geographic Affinities
- Cost Allocations for Data Center
- True Data Center Cost of Ownership

– This is a multi-disciplinary effort!



# Anticipating the Future State

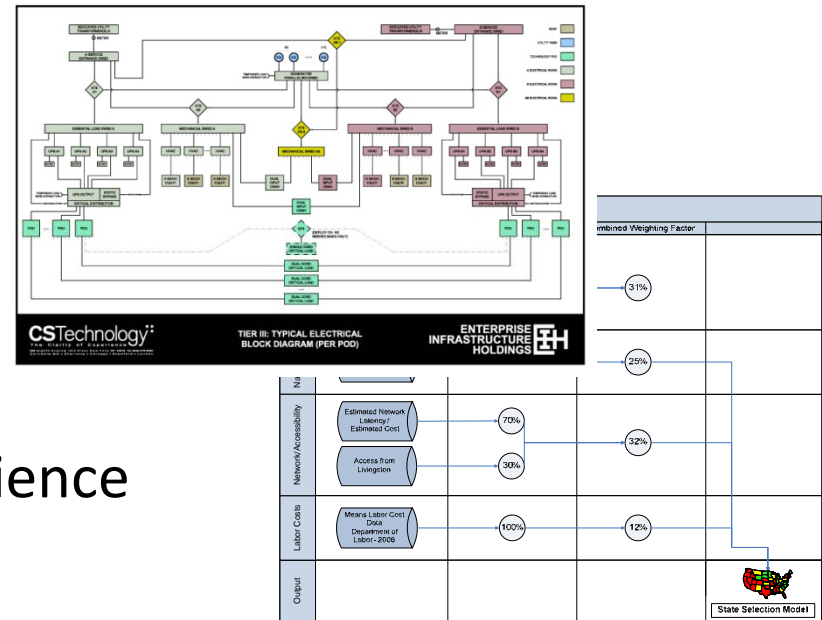
- Development of 3, 5 or 10 year IT growth model incorporating
  - Understanding of historical trends
  - “Business as Usual” growth
  - New business initiatives
  - IT platform changes
  - Hardware refresh cycles
  - Alignment of workload / resilience
- Identification of capacity runways, and future shortfalls
- This is an imprecise exercise; variability in forecast must be quantified, and modeling should be continuously revisited



# What are our Options?

– Understand “actions” available to address current state deficiencies

- Facility uplift / expansion
- New asset development
- Migration of IT workload
- Consolidation of IT workload
- Alignment of workload / resilience
- Outsourcing, collocation



– Leverage credible sources to generate cost estimates associated with available actions



# Examples of Analysis

1. Capacity Case
2. Real Estate Case
3. Financial Case
4. Resiliency Case

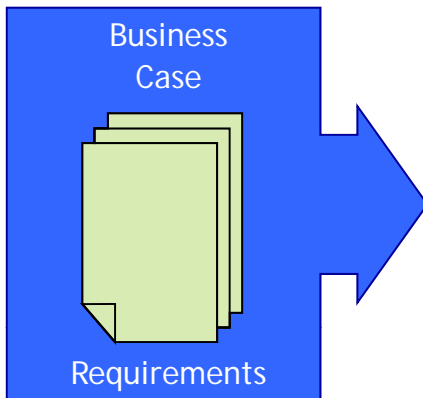


# Capacity Case Examples

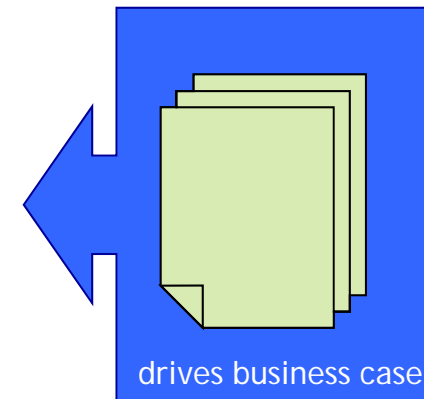
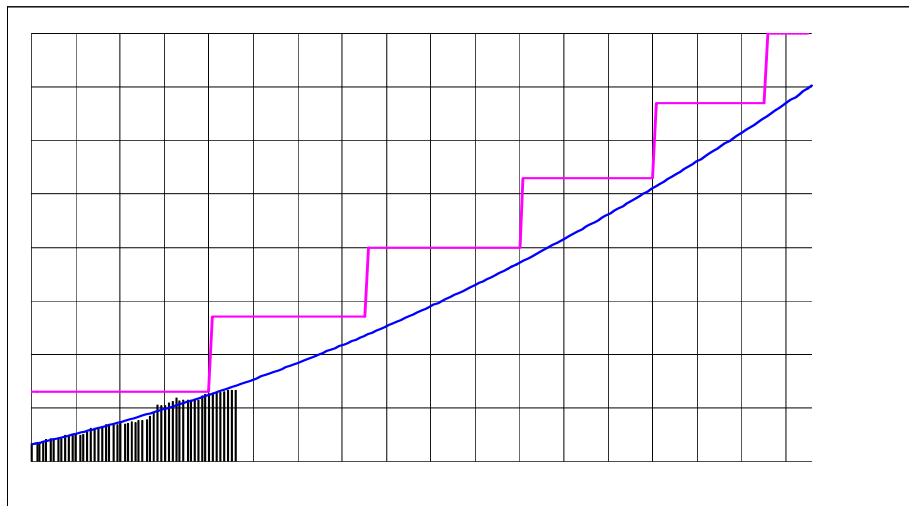
- Considerations for a Capacity Case
- Unit Cost Baseline for Potential Sites (Example 1)
- Sample P&L and Unit Cost Results (Example 2)



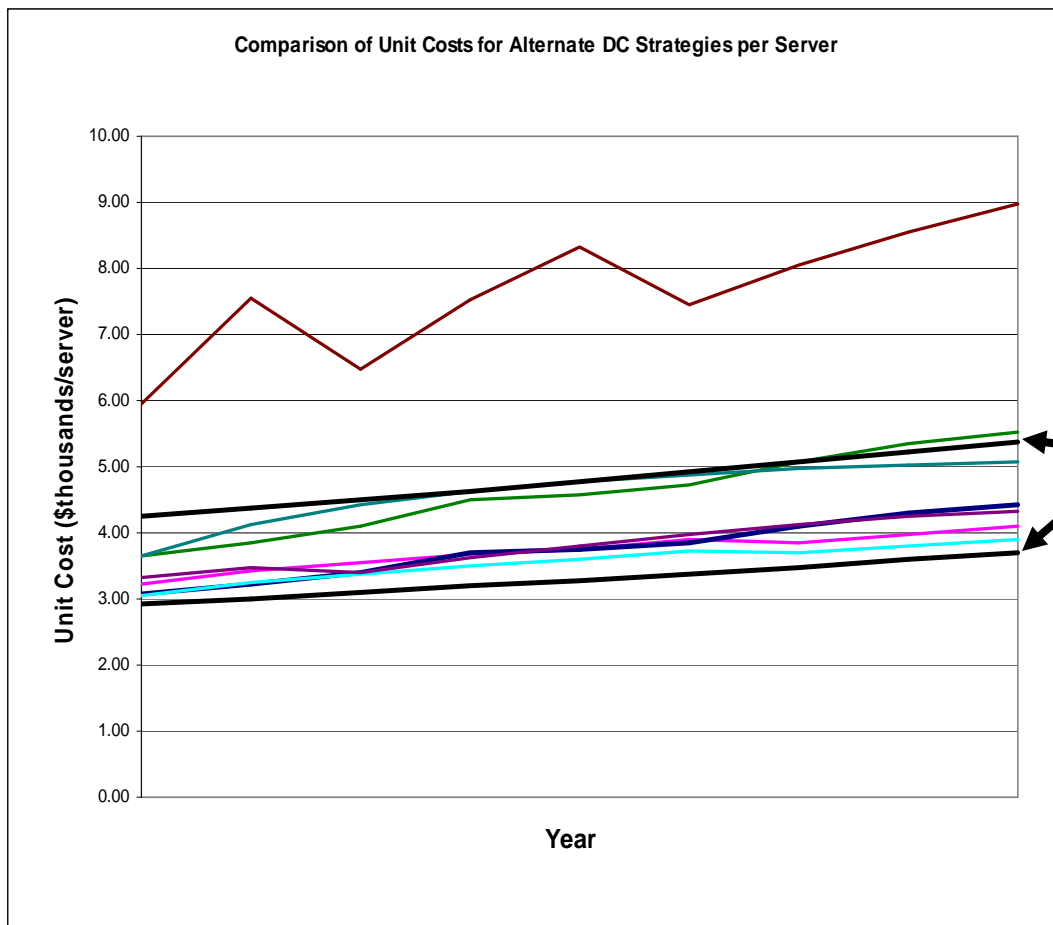
# Considerations for a Capacity Case



- Data, data, data
- Multiple types of historical data – UPS, server count, SAN data
- New initiative capacity impacts difficult to forecast
- Differentiate different types of capacity
- Can you show the link between your demand trend and the recent economic downturn?



# Unit Cost Baseline for Potential Sites

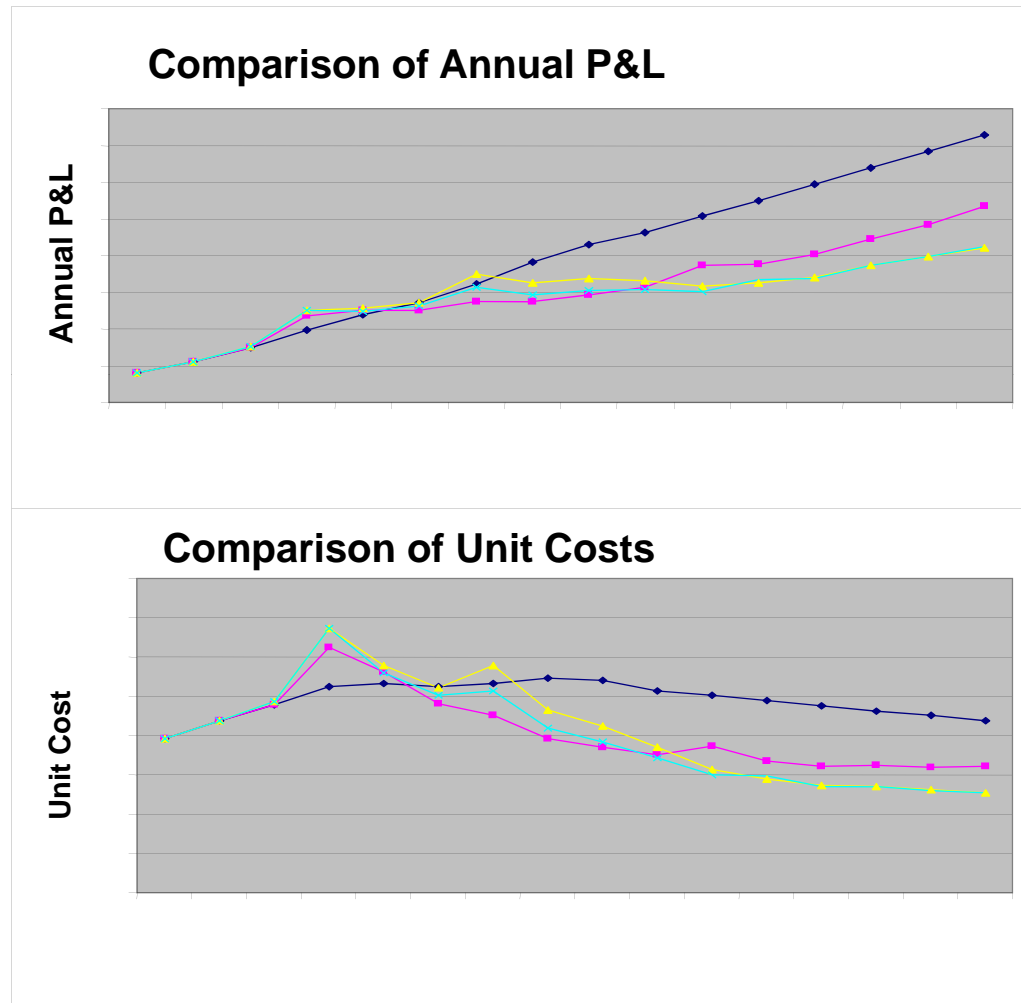


- Over time Unit Cost trends upward, due to inflation
- Raw server count increases by roughly 5x over the planning interval
- Industry Benchmark of \$5K/KW/year with average 600-800 W/server for large DCs shown by black curves (with 3% inflation)



# Sample P&L and Unit Cost Results

- These results show a comparison over time of the P&L impacts associated with alternative strategies
- Such analysis allows the selection of the strategy that best fits short or long term financial goals
- Many firms riding the dark blue curve allocate data center cost based on space occupancy. Can you see an issue with this approach?
- Unit cost comparison allows the demonstration of cost cutting advantages of some alternatives
- Unit costs provide a better basis for data center cost allocation (e.g., \$/KW of consumption)
- Can be on a per server or per unit power basis, but be careful how you incent

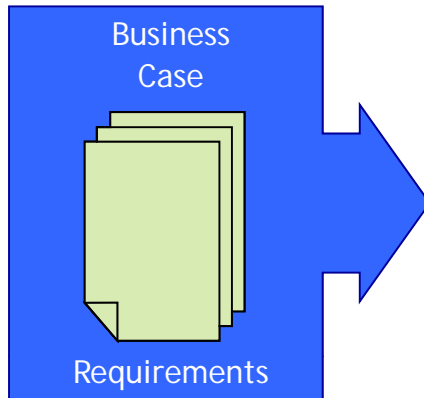


# Real Estate Case Example

- Considerations for a Real Estate Case
- Unit Costs for Existing Sites (Example 3)
- Migration Costs can Dominate (Example 4)



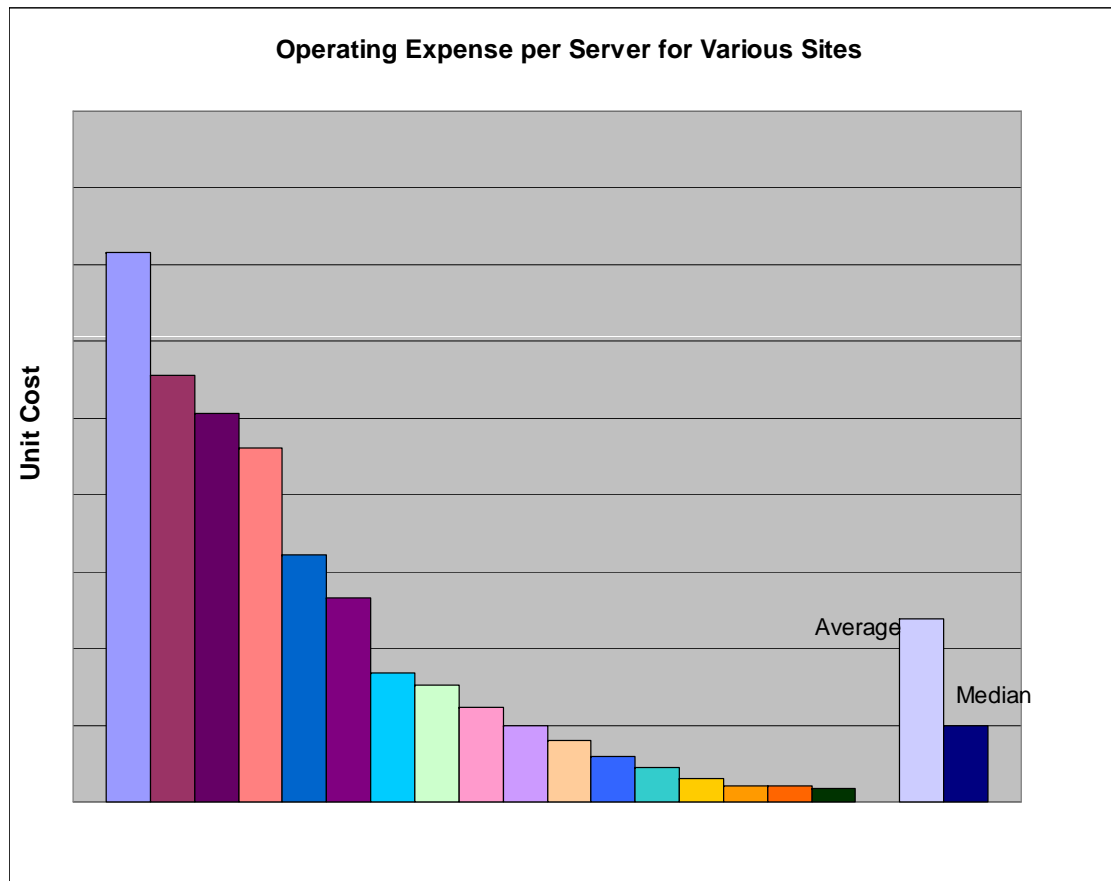
# Considerations for a Real Estate Case



- Most frequently driven by M&A activity, lease expiry, or a significantly aging infrastructure
- Cost is almost always underestimated for technology and migration and can kill an otherwise workable plan
- Generally involves separating people and technology, which is inherently transformative
- Move operations to lower cost regions



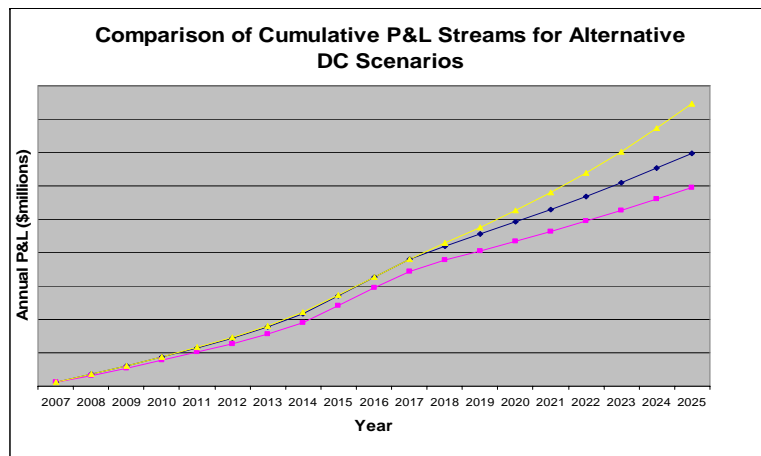
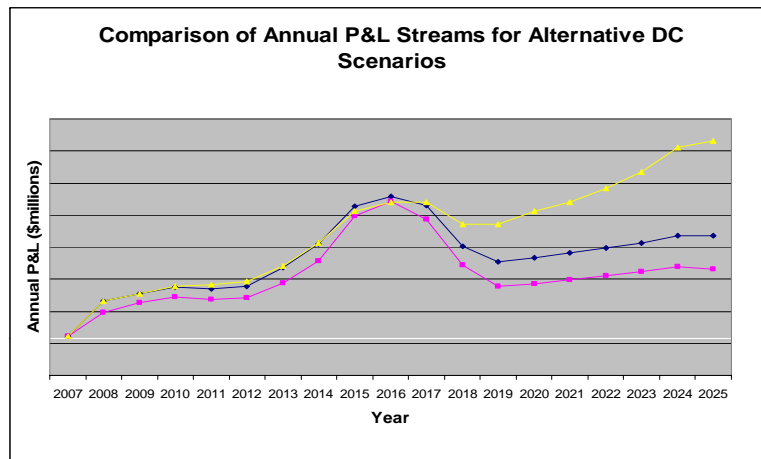
# Unit Costs for Existing Sites



- Costs range about 20x from lowest to highest in this example
- These results indicate the potential for significant savings from consolidation
- Detailed examination of the complete financial, capacity, and regulatory context is necessary to indicate which sites generate the greatest financial benefit from consolidation, and will inform detailed migration planning
- Data from different sites is still challenging to normalize



# Migration Costs can Dominate



- This analysis is based on various growth projections
- The “hump” is due to projected migration costs to exit a site at EOL
- The projection provides incentive for a migration “swat” team to explore or define less costly approaches
- The cumulative P&L graph gives one measure of the savings due to initiatives that limit growth

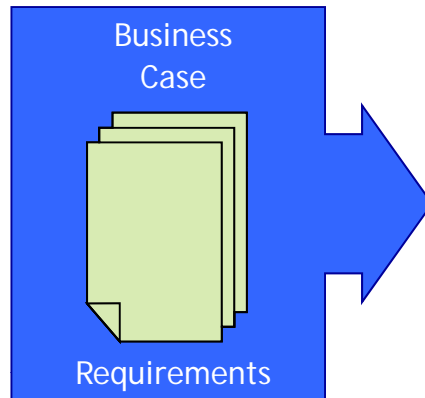


# Cost Case Example

- Considerations for a Cost Case
- Costs for Existing and Potential New Sites (Example 5)



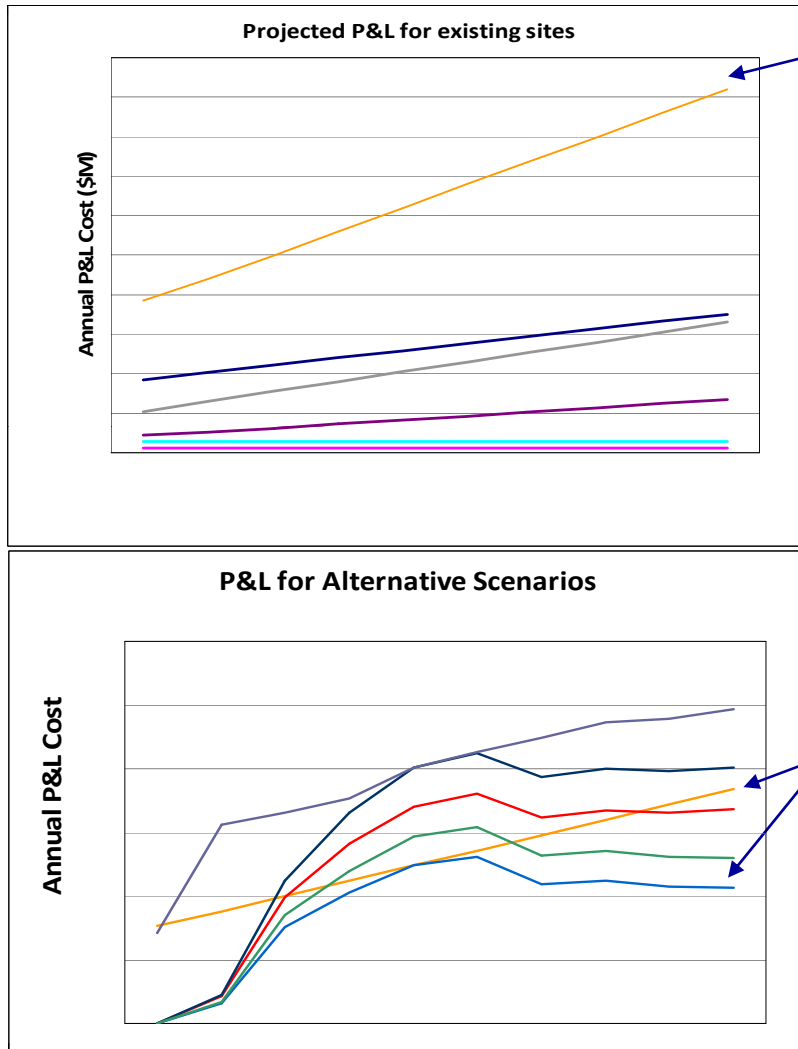
# Considerations for a Cost Case



- Must begin with accurate model of current true cost base (could end “free rides” for some constituents)
- Current cost base must be modeled forward, accounting for same demand factored into proposed alternatives
- Frequently approached from unit cost perspective, as data center operators have no control of number of units consumed



# Costs for Existing vs. Potential Sites



- The top, yellow curve is the sum of the bottom curves, representing the total P&L of a data center portfolio projected into the future
- Sometimes (but rarely), new alternatives (blue bottom curve) are possible that never exceed the legacy P&L (yellow curve)
- This example has very low migration costs (non-financial services firm)
- Alternatives vary by location and resiliency of build in this example

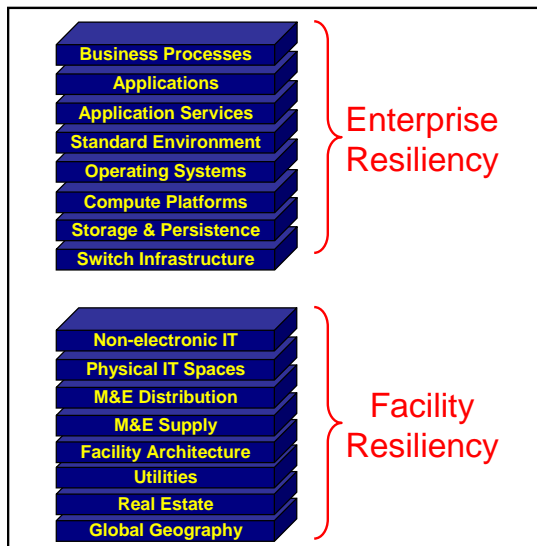
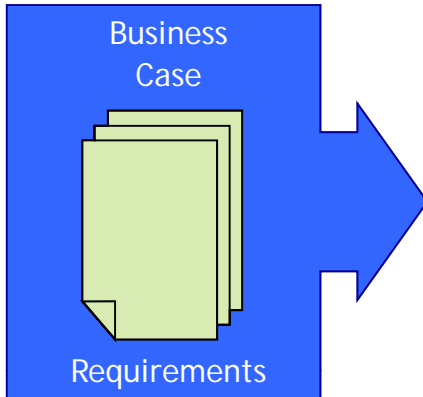


# Resiliency Case Example

1. Considerations for a Resiliency Case
2. Impact of Remediation Activities over Time  
(Example 6)



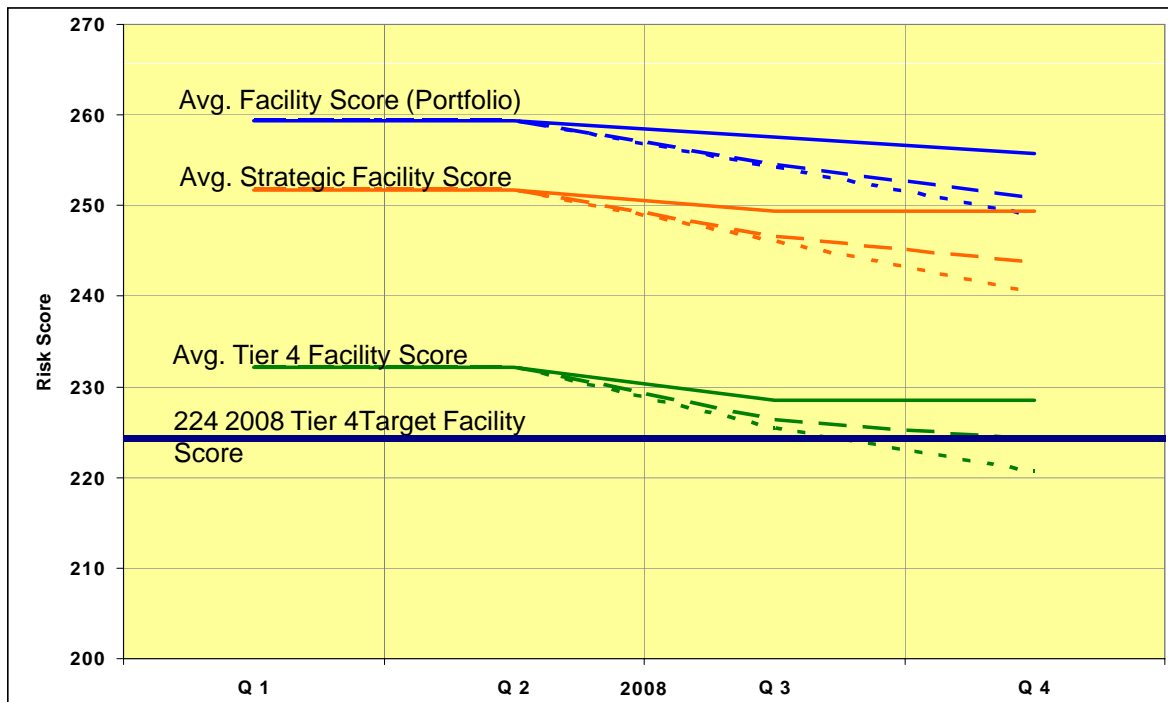
# Considerations for a Resiliency Case



- Any Resiliency case must be a multi-disciplined approach focused on Risks which could impact the ability of an organization to deliver business process
- Strong Resiliency cases will blur the line between facility resiliency and technology resiliency
  - Most Technology availability lags facility availability by several 9's
- Make sure the new plan addresses the legacy resilience issue(s)

# Risk Management Quantified

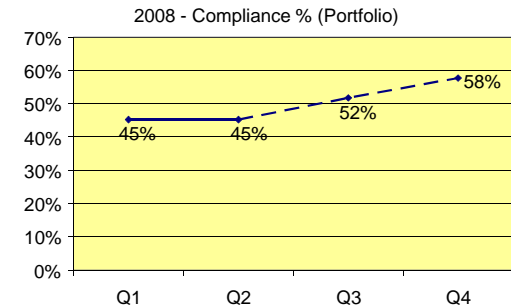
- This example illustrates the impact of risk mitigation activities via a quantification of residual risk over time.
  - Financials associated with mitigation are projected on a recurring basis and are governed via strict variance reporting
- Risk both internal to the data center and outside of the data center (man-made, natural, geo-political) is scored based on severity and probability



Solid line - Represent facility risk scores with "Planned & Budgeted" remediation activities

Dashed line 1 - Represent facility risk scores with "Planned & Budgeted" + "No Cost" remediation activities

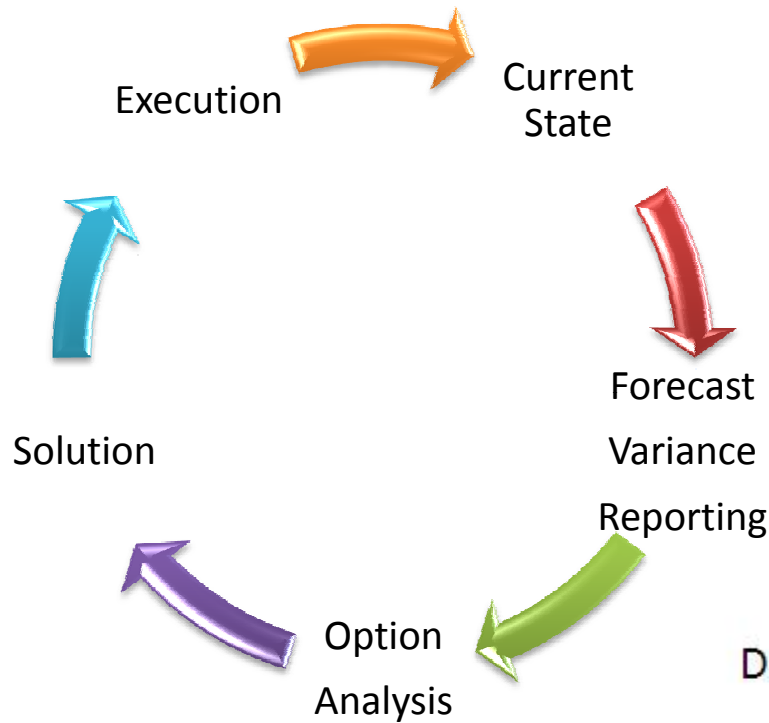
Dashed line 2 - Represent facility risk scores with "Planned & Budgeted" + "No Cost" + "High-Priority, un-funded" remediation activities



Represents the percentage of active facilities which fall under the facility risk compliance threshold



# Where are we now?



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NEW YORK



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# The Business Case

**How do you develop a long term strategic approach to address your immediate tactical need**

- consisting of buildings with 30+ year life spans;
- supporting a technology footprint which is refreshed every 3 years;
- to support a business process which changes every time you answer your phone?



# Strategic Thinking Meets Tactical Reality

Does the Business Case drive Strategy?

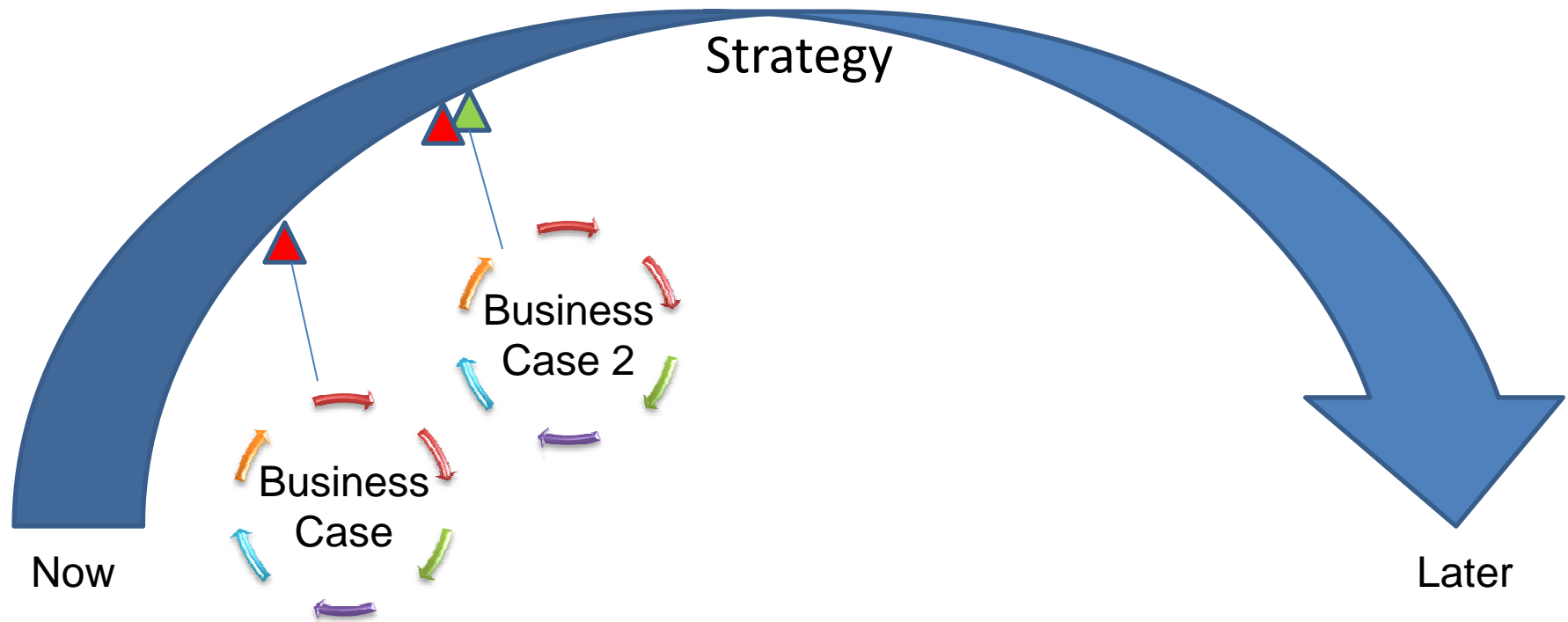
Does the Strategy drive the business case?

- The answer is 'Yes'

The business case must address tactical needs while remaining flexible to fall in line with the strategic vision of the organization



# Shaping the Strategy



# The Sell

Dimensions of success fall into four key areas

## 1. Speed

- Time to market; duration of the business cycle

## 2. Risk

- Resiliency; exposure to financial, natural, or man-made risk

## 3. Quality

- Richness of user experience; flexibility

## 4. Cost

- First cost, capital cost, operational expense, cost of capital and funding
- Supporting business growth often requires additional investment





# Prevent the Inevitable

- Unrealistic expectations for transformation (Business Plans need to be focused)
  - Manage the complexity of the proposed change
    - Identify which issue(s) will be addressed
    - How the issue will be improved and
    - How improvements will be reported over time
- Pork Barreling
  - Clearly define the scope and financial impact of the Business Case
  - Prevent project expansion to cure the sins of the past
  - Do not refresh everything to minimize migration risk
- Restless Tire Kickers
  - Do not try to please every constituency - just the important ones
  - Socialize your plan and make modifications as needed





# Be prepared to...

- Defend your data
  - Perform a Sensitivity Analysis
  - Know the quality of your data
- Defend your growth projections
  - No one ever believes the forward looking demand projections; consider several scenarios; adopt regular consumption reviews to adjust the projections
- Deliver the contradictory message
  - *“The \$10MM virtualization program you funded last year to solve this problem didn’t. Sorry about that.—But we can plan a migration that is much simpler as a result.”*



# CS Technology View

*To understand what goes into the business case, we need to think “Out of the Box” to address the way data center funding is approached and presented*



No single approach works for all cases. An in-depth, multi-faceted analysis is required to find the key drivers for a successful business case for data center funding (presuming they exist). If the case for investment cannot be made, you've still identified key cost elements and (hopefully) put into practice disciplines that can govern future business case exercises.

