

The Bellefonte Opportunity



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Nuclear Construction Summit, Washington, D.C.

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Huron Consulting Group Overview

About Huron

- Formed in 2002 with approximately 200 professionals.
- Today, over 2,100 professionals with leading experts serving select industries and critical services including:
 - Healthcare
 - Higher Education
 - Utilities
 - Law Firms
- Headquartered in Chicago with offices in US, EU, Middle East, Singapore, and Japan.
- Publicly traded since October 2004.
- Conducted more than 2,500 client engagements.

Utilities Consulting Practice

- Huron's utilities practice assist clients to define and implement business strategy, improve market share, and lower costs through:
 - Decision Analysis and Business Strategy
 - Regulatory and Litigation Support
 - Operations and Logistics Advisory
 - Sourcing and Supply Chain
 - Compliance and Audit Preparation

Nuclear Advisory Services

- Business Case Development
- Cost and Schedule Risk Modeling
- Plant Life Extension Assessment
- Regional Economic Impact Analysis
- Strategic Sourcing and Procurement

TVA Nuclear

Tennessee Valley Authority is an industry leader in nuclear generation development and operation.

Operational Phase



Browns Ferry 1

Construction Phase



Watts Bar 2

Analysis Phase

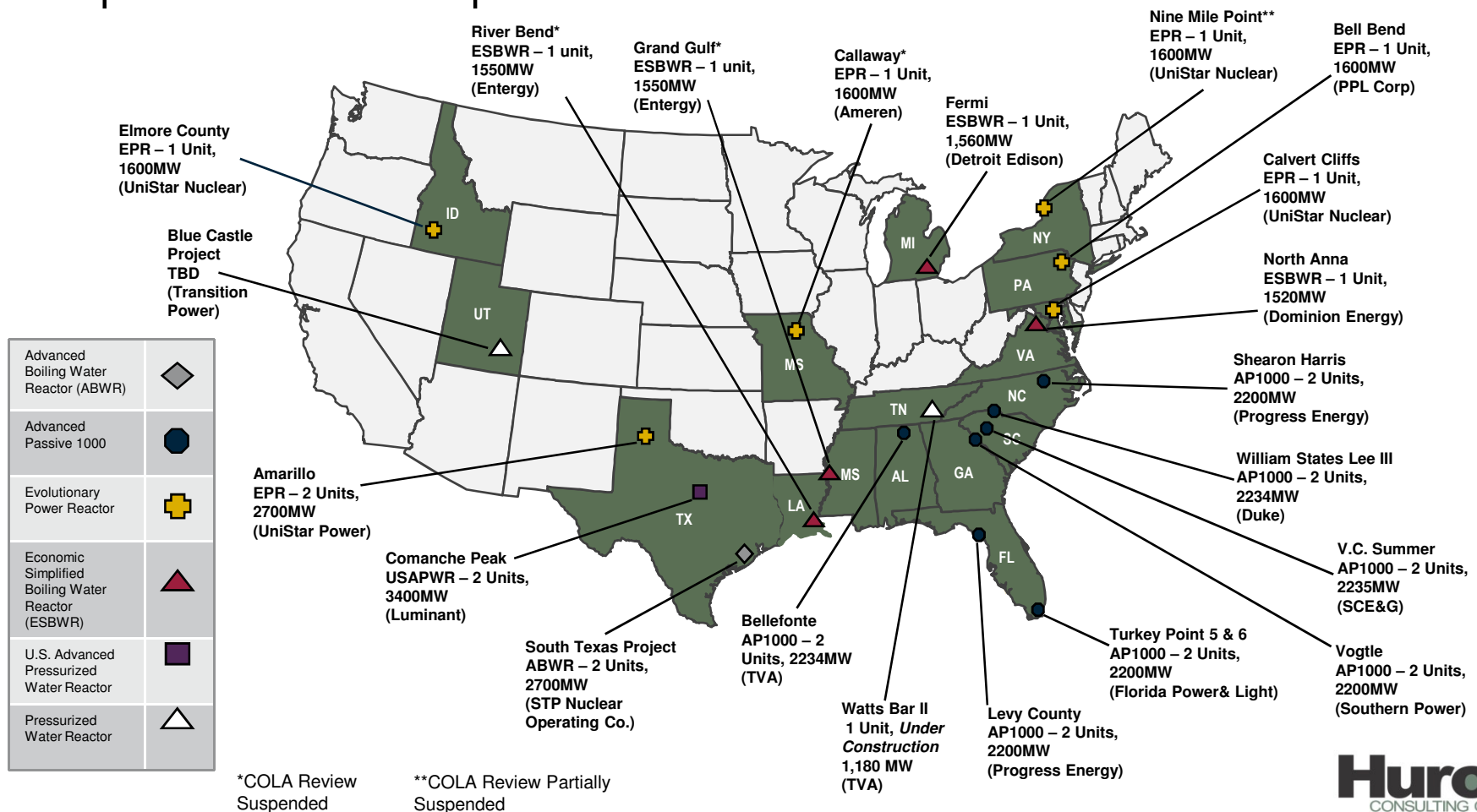


Bellefonte

TVA's nuclear generation plan fits in with the longer term strategic plan that calls for 50% of all power generated by clean energy sources*

Strategic Context

The Bellefonte site is one of twenty one locations in the U.S. where thirty-one new nuclear reactors are currently being studied or are planned for development.



The Bellefonte Decision

Huron Consulting Group was retained in March 2008 to evaluate the risks and uncertainties surrounding cost and schedule estimates with regard to each decision option.

Option 1

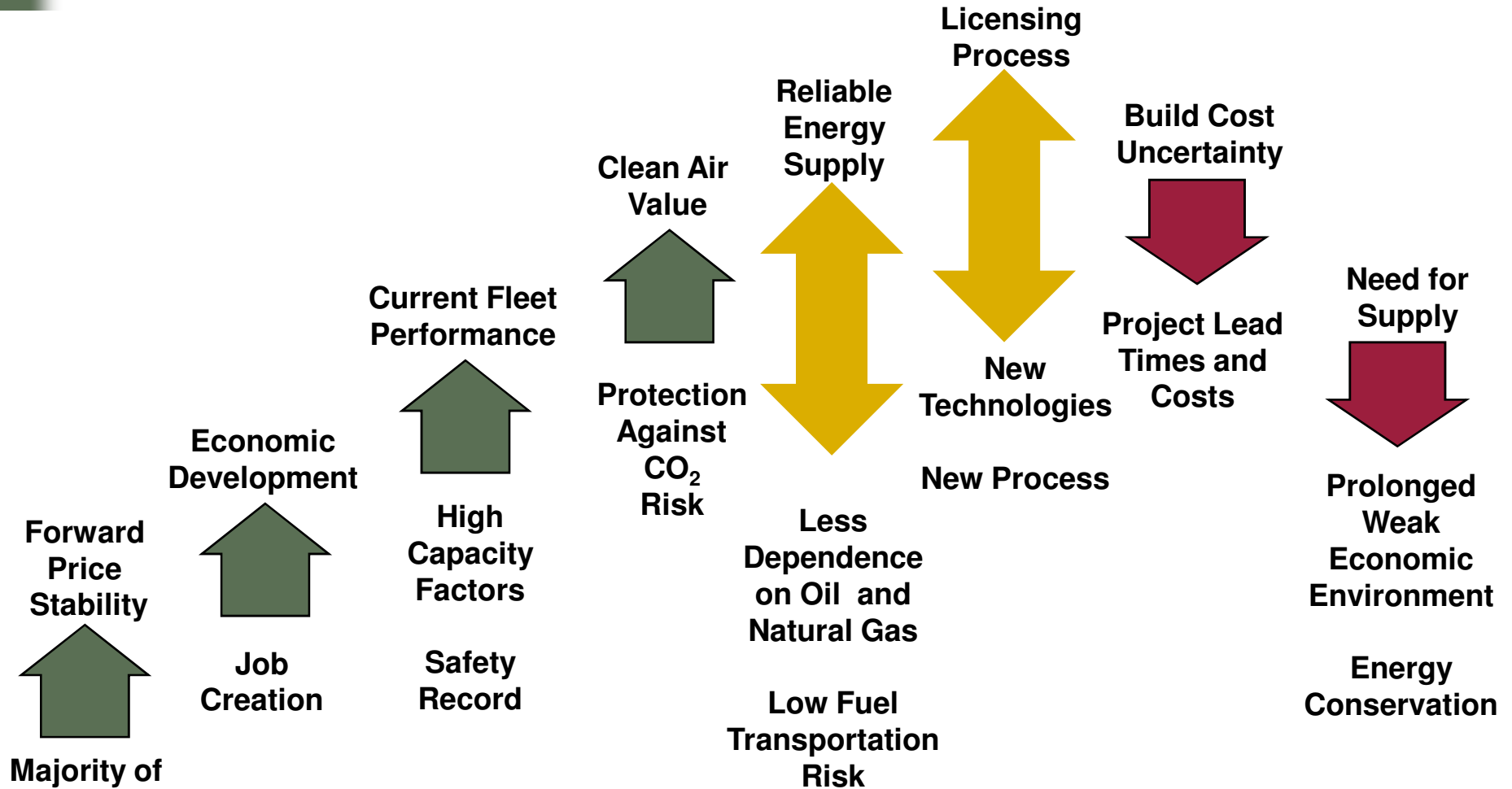
Complete the partially built existing Babcox and Wilcox (B&W) reactors.

Option 2

Construct Westinghouse AP1000 units.

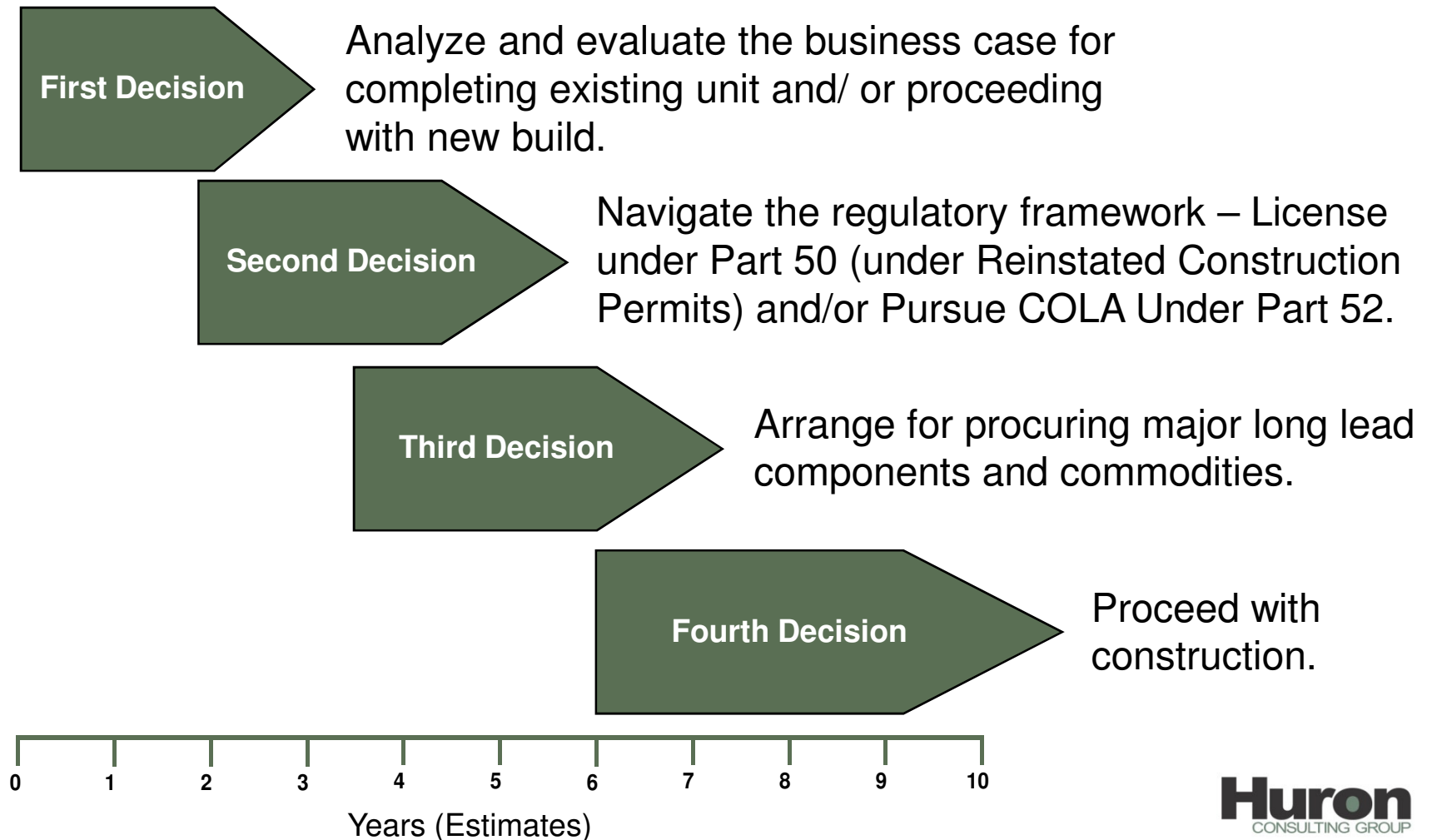
The Case for Nuclear Generation

But let's first examine what is driving the business case for nuclear.



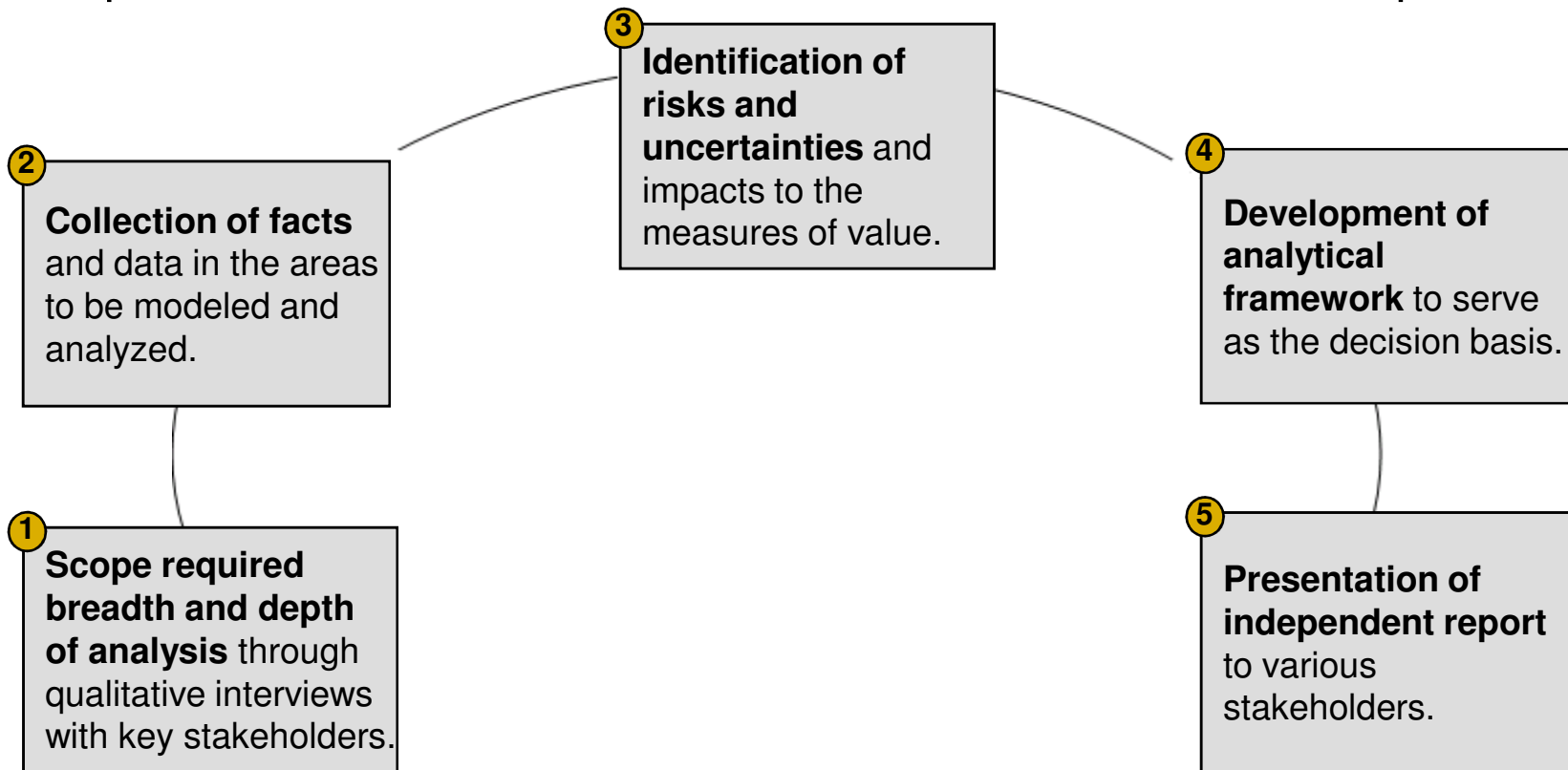
Roadmap to Commercial Nuclear Operation

Completing an unfinished plant or building a new nuclear plant is not a one step decision. It is a sequence of four successive decisions.



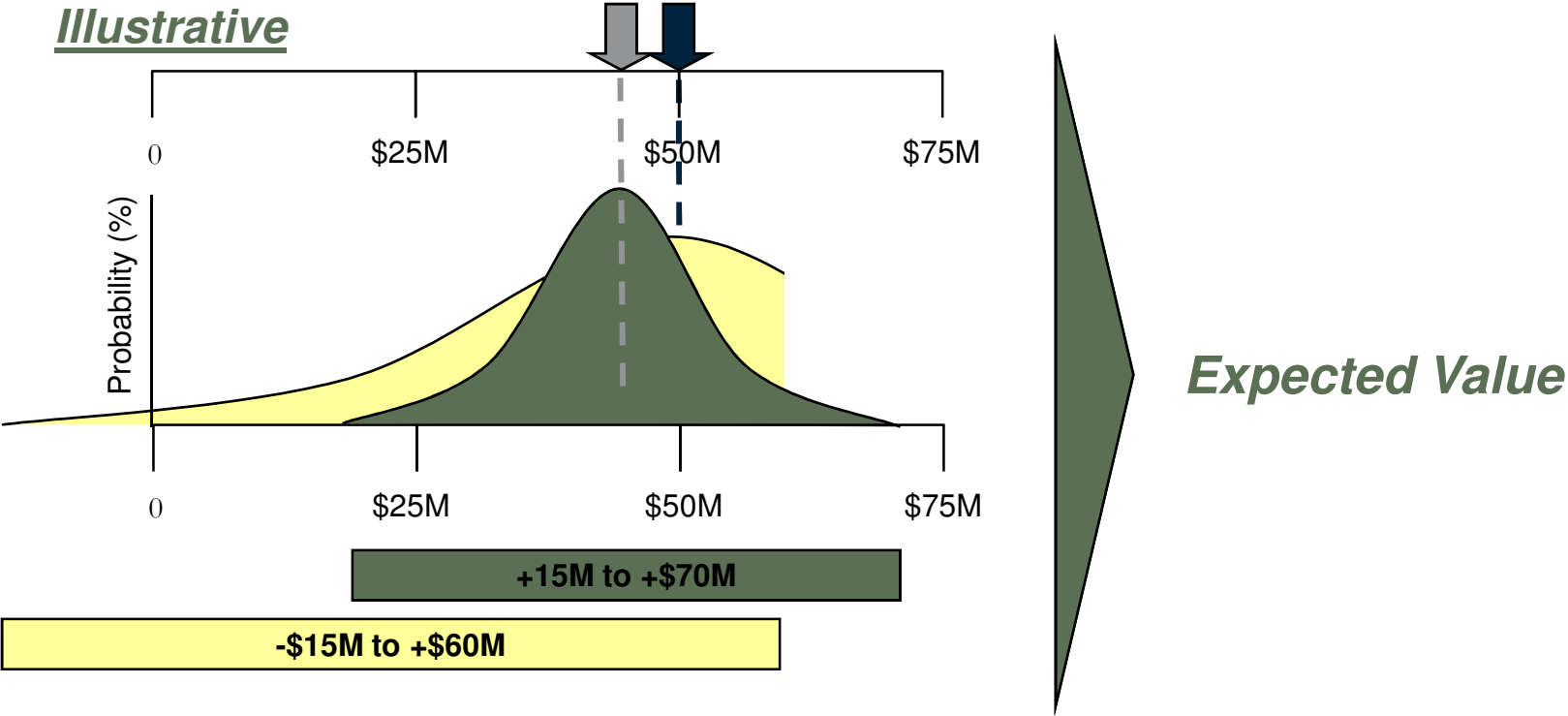
Methodology – Decision Analysis Overview

Decision Analysis is the process of developing a “clean” analytical framework to describe a “complex” project. The end result is a value measure, in this case cash flow and schedule metric for a wide range of possible scenarios associated with each of the decision options.



Methodology - Stochastic Modeling

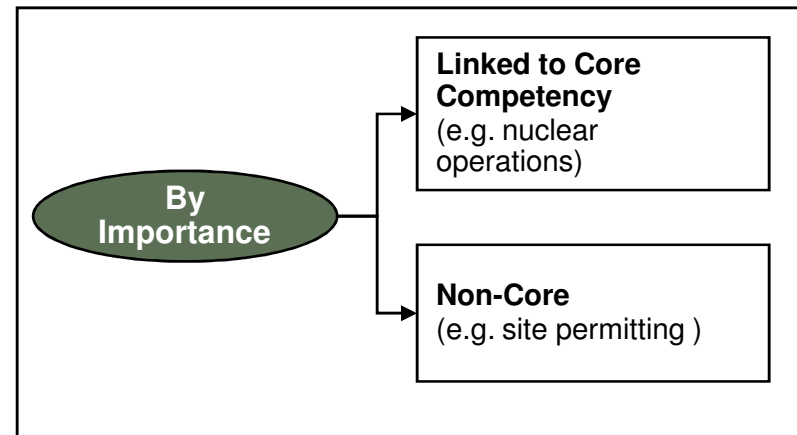
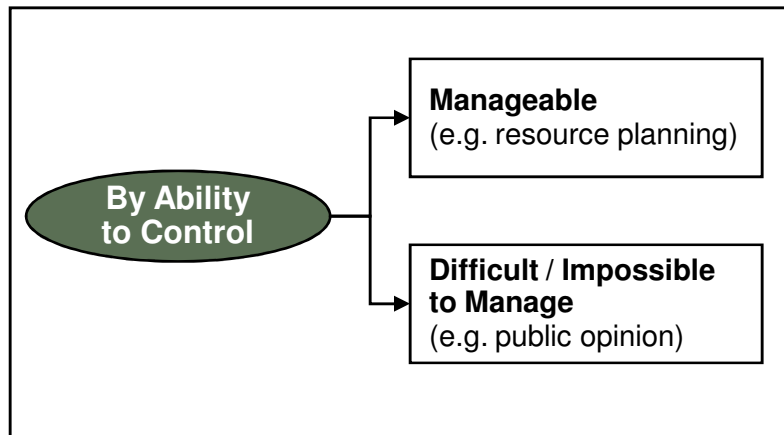
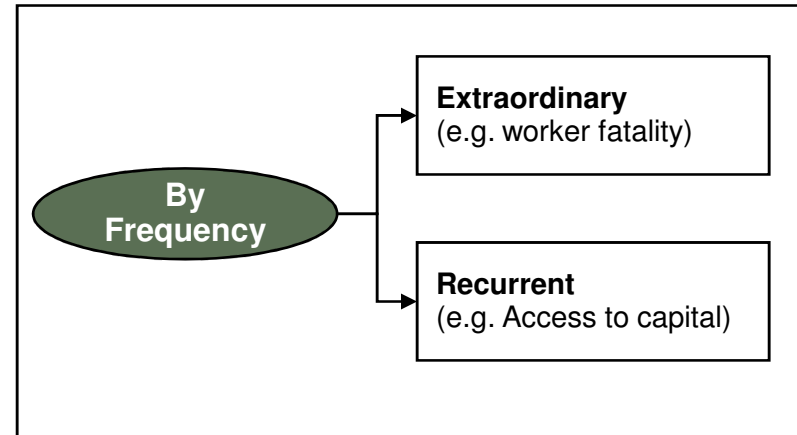
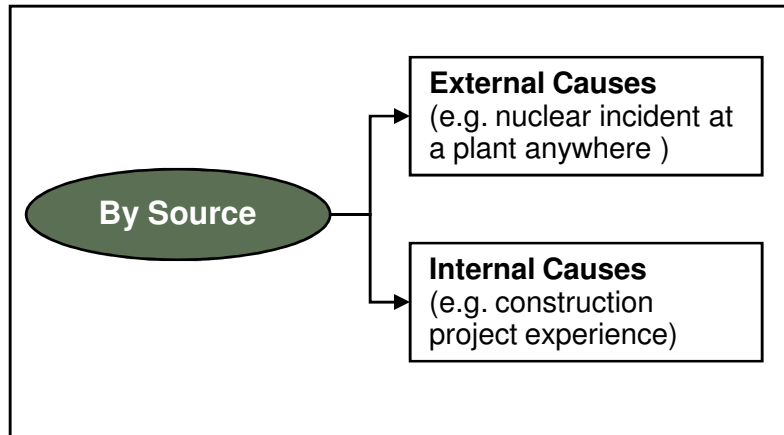
Stochastic techniques, such as Monte Carlo analysis, were used to aid in analyzing the effect of varying inputs on the output of the model and to understand the full range of results.



A stochastic approach provides insights to help make better decisions

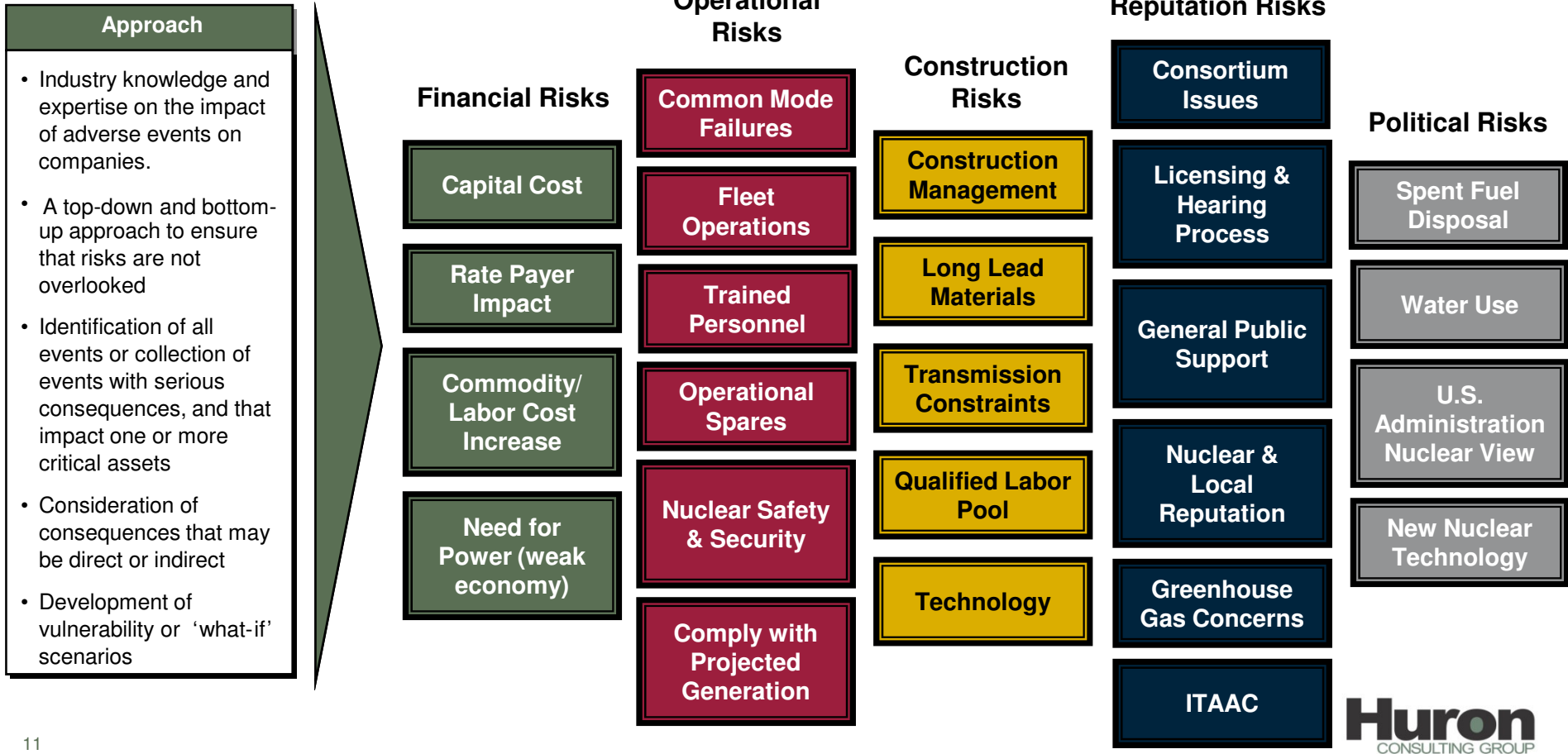
Methodology - Risk Modeling Philosophy

Risks were classified and categorized along various parameters in order to triage them and guide the approaches for risk mitigation.



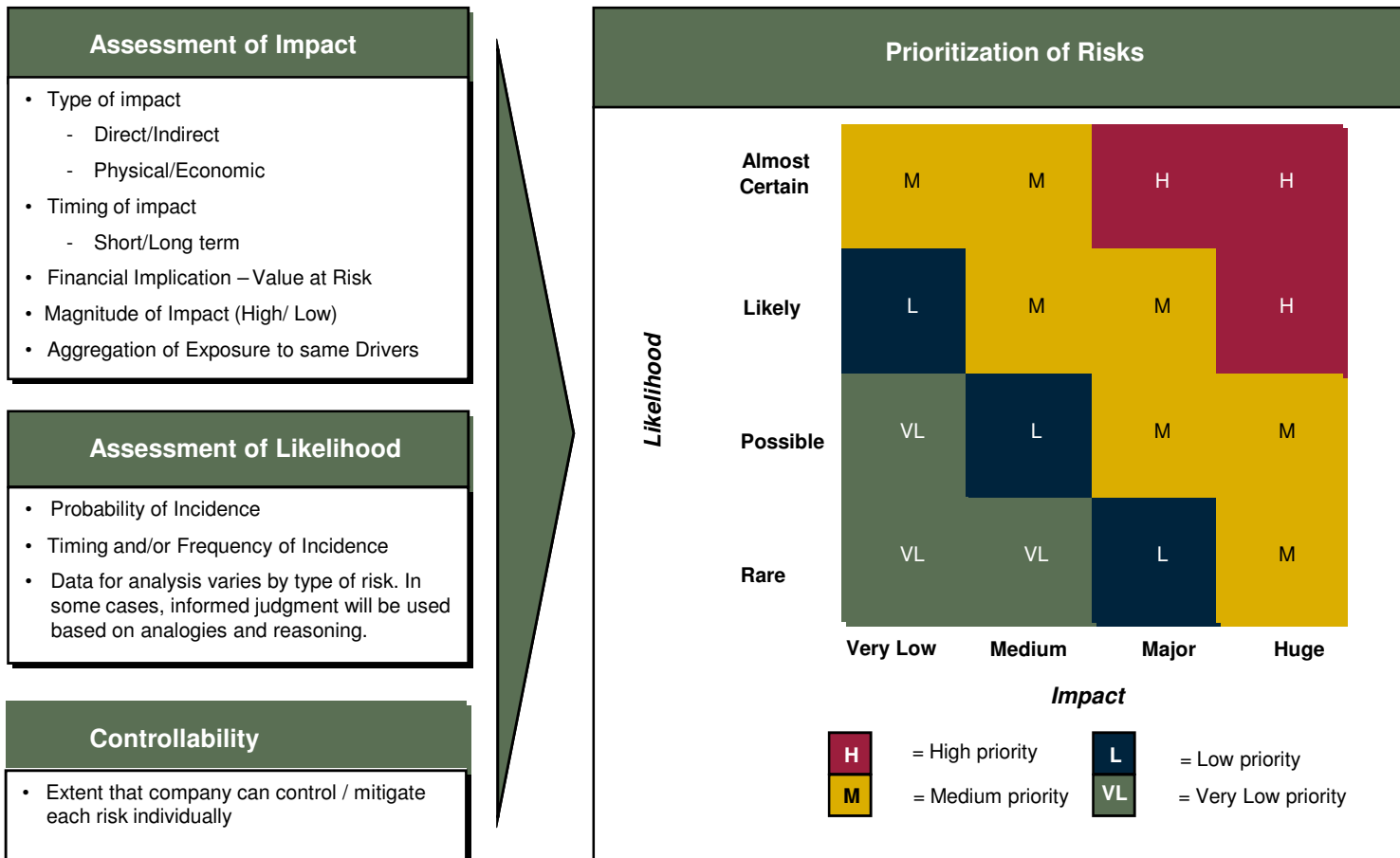
Methodology - Risk Determination

Huron and TVA identified a comprehensive set of risks for each decision, regardless of their likelihood of occurrence, to ensure that all risks are considered.



Risk Prioritization Method

The unmitigated risks were prioritized based on impact and probabilities, with the focus of mitigation being on the high priority risks.



Risk Mitigation

Developed a risk management strategy to determine a risk-adjusted view of cost and schedule impacts for each decision.

Risk Management Options

Transfer

- Insurance, or asking a third party to take on the risk in another way
- Contracting out some operations

Tolerate

- Ability to take action may be limited
- 'Watch' the risk to ensure that likelihood or impact does not change
- Track for new mitigation options as they arise

Treat

- Actions to contain the risk
- Contingency plans

Terminate

- Quick and decisive action to eliminate risk, for e.g.
 - Introduction of new technology

Considerations

Proportionality of response

Cost-benefit analysis

Precautionary approach given subjectivity of risk

Linkages between exposures

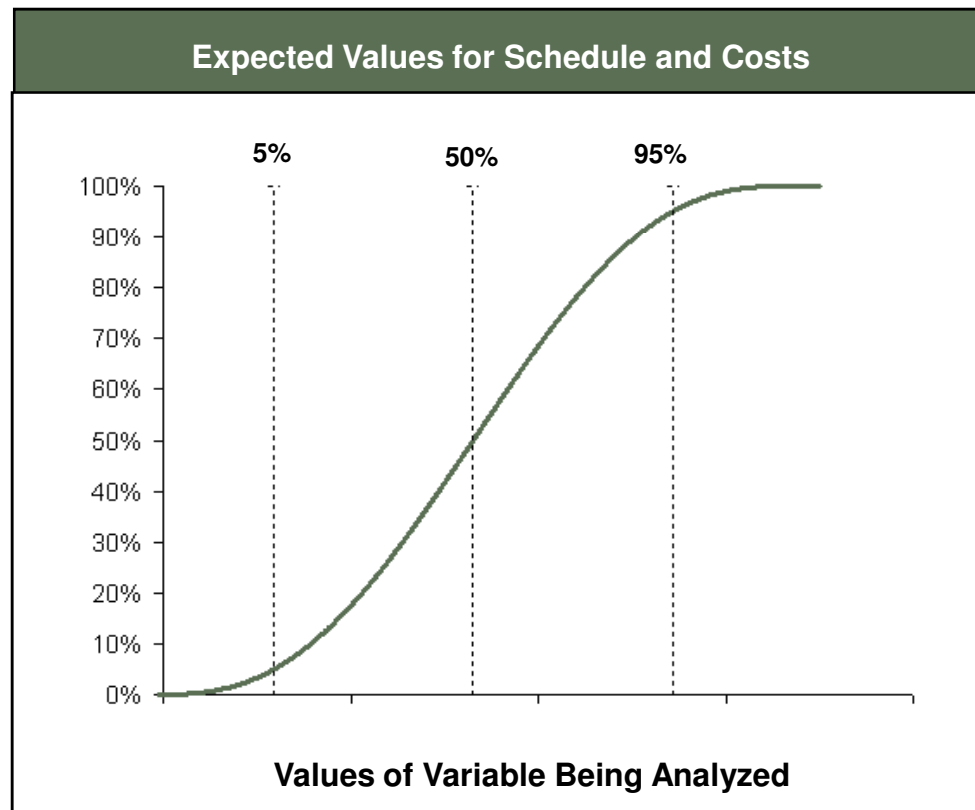
Counter-measures
(actions in place)

Contingencies (actions that get activated based on event)

Results

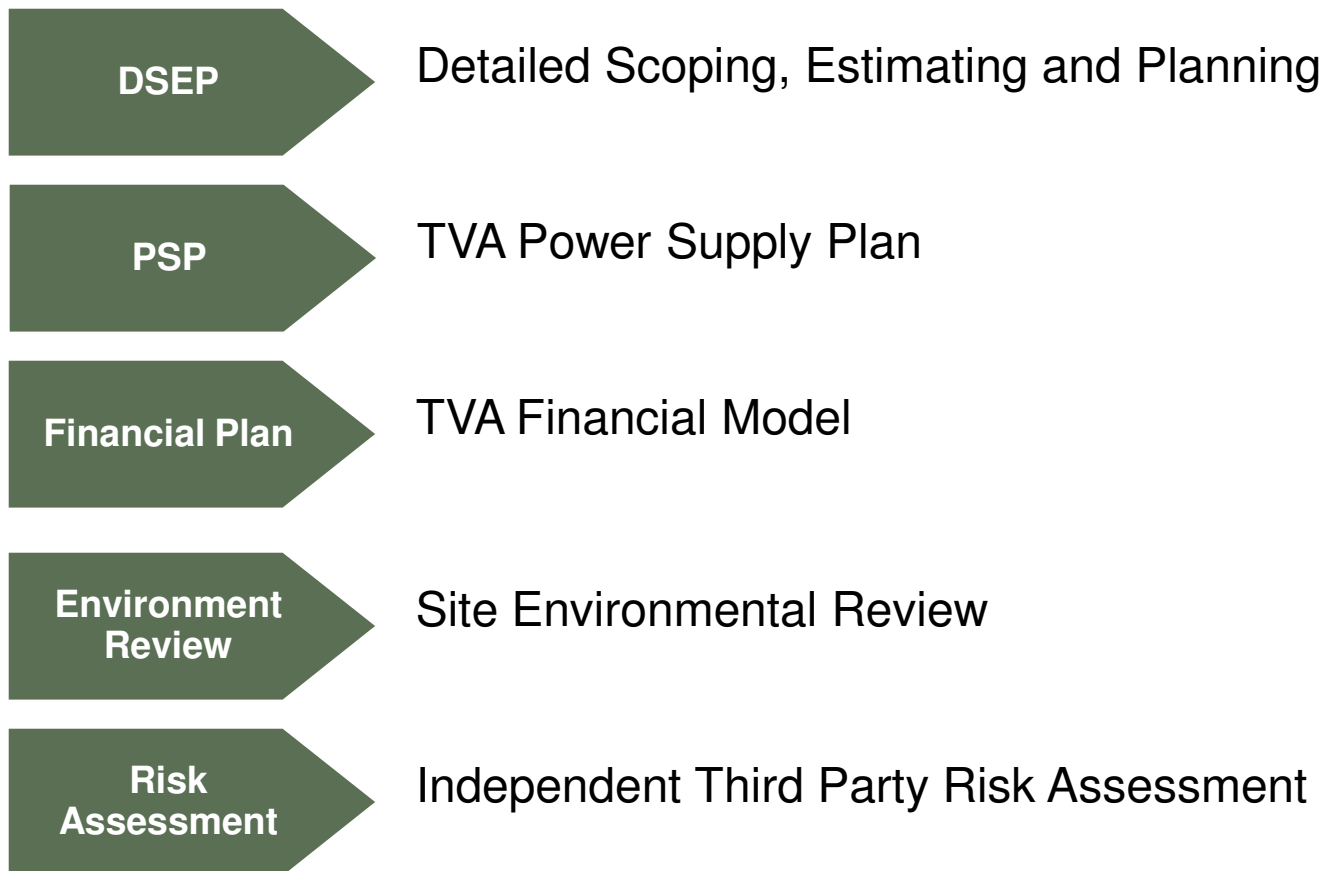
Huron developed an expected value for calculated costs and anticipated online schedule for each decision after considering the probability of occurrence and magnitude of impact for various risks and uncertainties.

Illustrative



Bellefonte Decision

The risk analysis that Huron is performing for TVA to evaluate the Bellefonte decision is one part of five deliverables that will be relied upon to make an informed decision.



Conclusion

So what is different today with decision making versus 30 years back during the time of the last major nuclear build across the country?

Deliberate

Intentional in making major decisions. Quantitative business case that takes a variety of inputs and analysis into consideration.

Documentation

Documenting major assumptions, off-ramps, decisions.

Communication

Improved and open communications internal to company, external with peer companies, with public and regulatory bodies

Arun Mani



P 713-222-5923
F 713-222-5901
amani@huronconsultinggroup.com

Arun Mani is a Managing Director in Huron Consulting Group's Utilities Consulting practice and specializes in assisting clients with large capital project and business operations decisions using state-of-the art Decision Analysis methodology.

Mr. Mani is an expert in risk assessments and financial modeling and has assisted clients analyze and evaluate major capital projects in the nuclear generation industry including new nuclear build, plant life extension, extended power up-rate, and major capital component replacements. He has worked with utility executives, attorneys, public utility commission personnel, and investment bankers to provide independent assessments on various topical issues including useful life of generation assets, capital project risks and returns, power procurement, and fair market value issues. Mr. Mani has successfully led and completed more than 50 consulting projects for over 20 clients over the past decade.

Prior to joining Huron Consulting Group, Mr. Mani was a Partner with Barrington-Wellesley Group, Inc. a boutique consulting firm specializing in the utilities industry, and before that held consulting positions with Navigant Consulting and Deloitte. Mr. Mani has a Bachelor of Arts degree in Economics and Mathematics from Denison University. He is also a Certified Management Consultant (CMC) and an Accredited Valuation Analyst (AVA). He is presently enrolled in a Certificate program in Strategic Decisions and Risk Management at Stanford University.

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