Project Delivery - Electric Utilities
Complex Project Delivery

- Traditional DBB approach changing for our utility clients
- Execution of large complex projects
- Alternate project delivery models
  - **EPC** (Engineering, Procurement, and Construction)
  - **EPCM** (Engineering, Procurement, and Construction Management)
  - **PgM** (Program Management)
Complex Project Delivery

► **EPC** (Engineering, Procurement, and Construction)
  • Contractor provides all services, including management
  • Risk is weighted towards the Contractor
  • Open Book EPC option

► **EPCM** (Engineering, Procurement, and Construction Management)
  • Major subcontractors are contracted to the Owner
  • Minor subcontractors and suppliers contracted to Contractor
  • Cost risk is weighted towards the Owner

► **PgM** (Program Management)
  • PgM provides administration and management services
  • All contracts are with owner
  • Risk is almost exclusively with the Owner
Complex Project Delivery

**Owner’s Capacity to Manage Project**

- **High**
  - Self-perform
  - D/B/B

- **Low**
  - EPC
  - PgM or EPCM

**Project Size**

- Medium: $25-100M
- Large: $200M
- Mega Scale: $1B+
Major Program Life Cycle

Scope Development
- Real Estate Acquisition
- Labor Agreements
- Performance Specs
- 30% Design
- Contracting Strategy

Permitting Support

10% Design
- Full Design Documents
- Budget Development
- Final Permits
- Master Schedule
- Major Const/Equip Procurement
- Construction/Outage Planning

Public Involvement
- Final As-Builts
- Minor Procurement
- Cost/Schedule Control
- Construction Execution
- Quality Control

Energization
- Audit Management
- Close-Out

Budget Compliance
Major Program Life Cycle

Typical DBB Approach

Scope Development
Permitting Support

Real Estate Acquisition
Labor Agreements
Performance Specs
30% Design
Contracting Strategy

10% Design
Budget Development
Master Schedule
Construction/Outage Planning

Full Design Documents
Final Permits
Major Const/Equip
Procurement

Public Involvement
Minor Procurement
Cost/Schedule Control
Construction Execution
Quality Control

Energization
Budget Compliance
Audit Management
Close-Out
Final As-Builts

Design/Bid/Build
Major Program Life Cycle

Typical EPC Approach

Scope Development
Permitting Support

Real Estate Acquisition
Labor Agreements
Performance Specs
30% Design
Contracting Strategy

10% Design
Budget Development
Master Schedule
Construction/Outage Planning

Full Design Documents
Final Permits

Engineer/Procure/Construct (EPC)

Public Involvement

Minor Procurement
Cost/Schedule Control
Construction Execution
Quality Control

Energization
Budget Compliance
Audit Management
Close-Out
Final As-Builts
## Major Program Life Cycle

### Program Management Approach

<table>
<thead>
<tr>
<th>Scope Development</th>
<th>Permitting Support</th>
<th>10% Design</th>
<th>Budget Development</th>
<th>Master Schedule</th>
<th>Construction/Outage Planning</th>
<th>Full Design Documents</th>
<th>Final Permits</th>
<th>Major Const/Equip</th>
<th>Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Estate Acquisition</td>
<td>Labor Agreements</td>
<td>Performance Specs</td>
<td>30% Design</td>
<td>Contracting Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Involvement</td>
<td>Minor Procurement</td>
<td>Cost/Schedule Control</td>
<td>Construction Execution</td>
<td>Quality Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energization</td>
<td>Budget Compliance</td>
<td>Audit Management</td>
<td>Close-Out</td>
<td>Final As-Builts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Program Management Is...
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$1 Billion</td>
<td>$1 Billion</td>
<td>$1.5 Billion</td>
<td>$1.4 Billion</td>
<td>$500 Million</td>
<td>$750 Million</td>
<td>$1.9 Billion</td>
<td>$2.5 Billion</td>
</tr>
<tr>
<td>75 BMcD FTEs</td>
<td>75 BMcD FTEs</td>
<td>110 BMcD FTEs</td>
<td>85 BMcD FTEs</td>
<td>15 BMcD FTEs</td>
<td>15 BMcD FTEs</td>
<td>75 BMcD FTEs</td>
<td>55 BMcD FTEs</td>
</tr>
<tr>
<td>$13.3 Million</td>
<td>$13.3 Million</td>
<td>$13.6 Million</td>
<td>$16.4 Million</td>
<td>$33.3 Million</td>
<td>$50 Million</td>
<td>$25.3 Million</td>
<td>$45.5 Million</td>
</tr>
<tr>
<td><strong>Engineering</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
<td><strong>✓</strong></td>
</tr>
<tr>
<td>System Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Permit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Compliance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siting &amp; Routing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Relations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OUR PROGRAM MANAGEMENT TOOLS
THE KEYS TO OUR SUCCESS
Project Controls Platforms

Unifier - Oracle
P6 – Oracle
Primavera Portfolio Management – Oracle
Risk Analysis – Oracle

BMcD NoTouch Reporting ®
BMcD OneTouchPM®
BMcD OneTouchMobile
Microsoft SharePoint
Effective Risk Management
Potential Project Risks

- Subsurface, geographic or weather conditions
- Inadequate cost and schedule management
- Poor safety procedures, lack of safety training
- Defective material, design errors
- Failure to meet public meeting commitments
- Violation of environmental laws
Risk Management

Project manager centric

Achieving successful profitable project

Project Risk Management

► Manage project contingency
► Develop consistent periodic review
► Evaluate uncertainties in Project (Project Risk)
  • Opportunities
  • Threats
► Mitigate the uncertainties to achieve favorable results for the project.
► Input to the Estimating Process (Contingency)
Partnerships

- Utilize existing contracts
- Align incentives and penalties with Owner’s goal
- Strong business relationships
- Known expectations
- Know processes and procedures
# Electric Utility Project Delivery

<table>
<thead>
<tr>
<th></th>
<th>EPC</th>
<th>EPCM</th>
<th>PgM</th>
<th>D/B/B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong>*</td>
<td>High</td>
<td>Average</td>
<td>Low</td>
<td>Average</td>
</tr>
<tr>
<td><strong>Risk to Contractor</strong></td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td><strong>Schedule Performance</strong></td>
<td>Excellent</td>
<td>Above Average</td>
<td>Above Average</td>
<td>Below Average</td>
</tr>
<tr>
<td><strong>Owner Involvement</strong></td>
<td>Low</td>
<td>Moderate</td>
<td>Fairly High</td>
<td>High</td>
</tr>
</tbody>
</table>

*Contracted amounts, not including potential cost overruns during construction