

# Speed to Market

## Fast Track Project Implementation



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# Agenda/ Overview

- **Introduction / Overview**
- **Why the Need for Speed?**
- **How Do I Go Fast?**
  - Design – Bid – Build with Early Procurement
  - Construction Manager  
(CM at Risk or CM Agent)
  - Design – Build
- **What is Different? / How Do I Do It?**
  - Compare and contrast the methods
- **Case Studies**
  - Purdue University – Chiller Replacement
  - Enwave – Biomedical District Steam Plant
  - Airbus – Powerhouse
- **Questions & Answers**



## Why the Need for Speed?

# Why the Need for Speed?

- **Seasonal Business**
  - Need to meet peak demands
  - Winter (heating demand) and Summer (cooling demand) come every year
  - Shortening a project by a few months can add a year of “service”
- **Not Enough Implementation Time**
  - Equipment failure
  - New customer needs load quickly
  - Delayed decision to execute the project
- **Minimize Plant Disruption**
- **It's Fun to Go Fast**







# How Do I Go Fast? & What is Different?

# How Do I Go Fast?



# Early Equipment Procurement

- **How Do I Do It?**

- Specification developed for long-lead items
- Owner reviews bids and places equipment order
- Shop drawings for equipment come to owner
- Delivery of equipment can be to Owner or Contractor

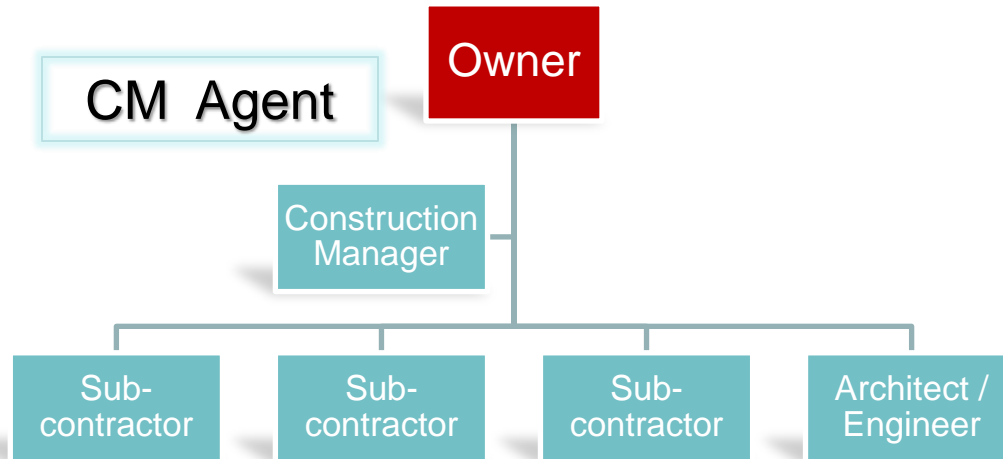


- **What is Different?**

- Can drastically reduce schedule
- Provides early detailed equipment information
- Adds to the contracts to administer
- Owner is responsible for coordination between contracts
  - Scope
  - Delivery
  - Warranty

# Construction Manager

How Do I Do It?

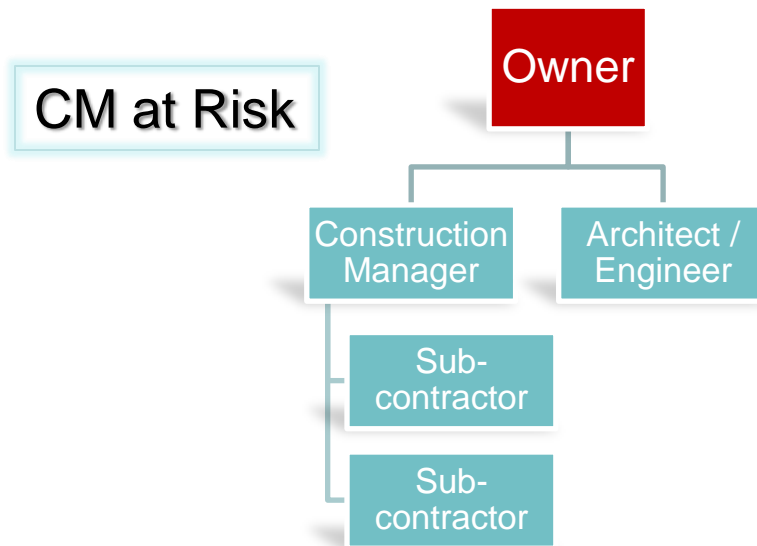


- **Two major types:**

- Construction Manager Agent
- Construction Manager at Risk

- **Procured via:**

- Request for Qualifications (RFQ)
- Request for Proposal (RFP)
- Other method



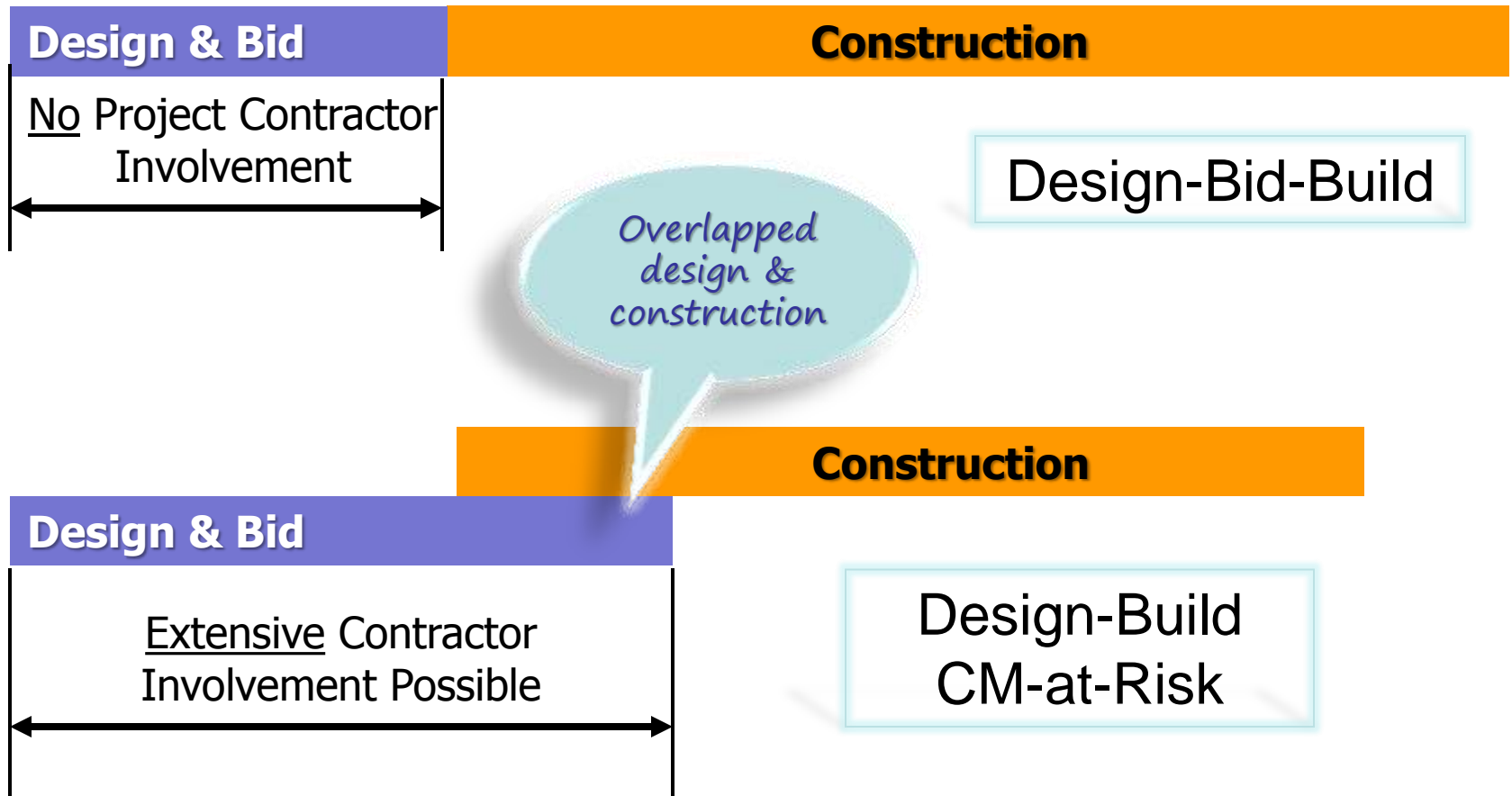
- **Responses can include:**

- Construction fee
- Pre-construction services
- General conditions
- Staffing plan
- Schedule
- Change order markup fee



# DBB vs. CM & Design-Build

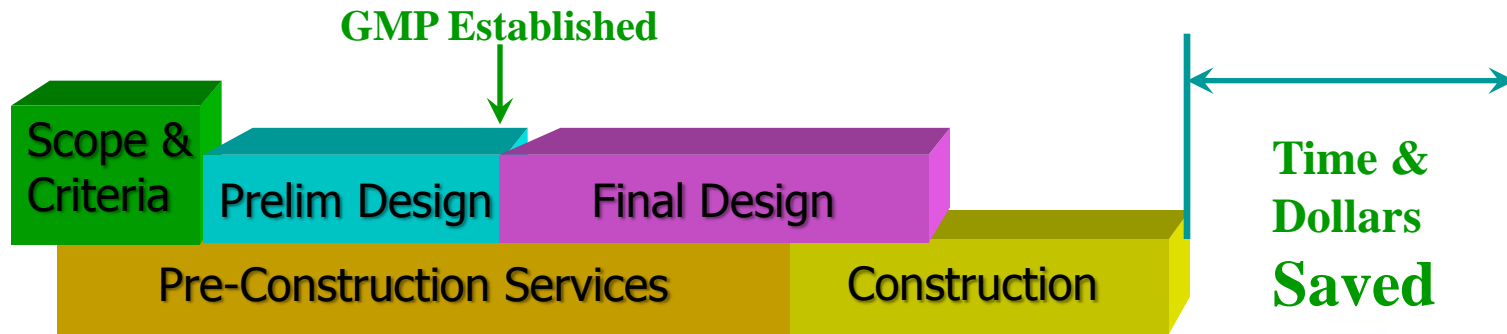
What is Different?



# D-B-B vs. Design-Build

What is Different?

## Design-Build Utilizing Open Book Approach



## Traditional Design-Bid-Build Approach

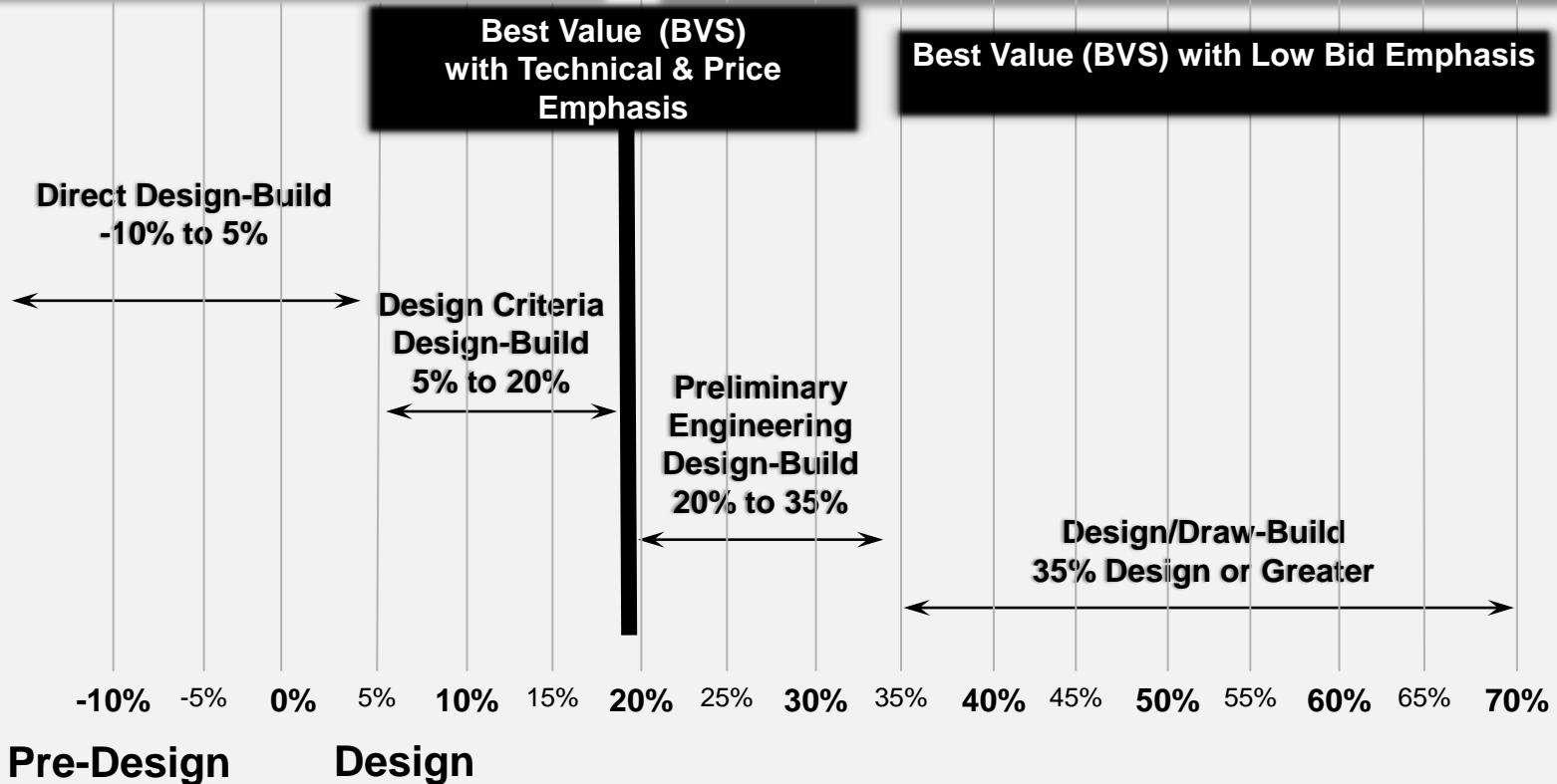


# Design-Build

## How Do I Do It?

### Usually Best Value or Qualifications

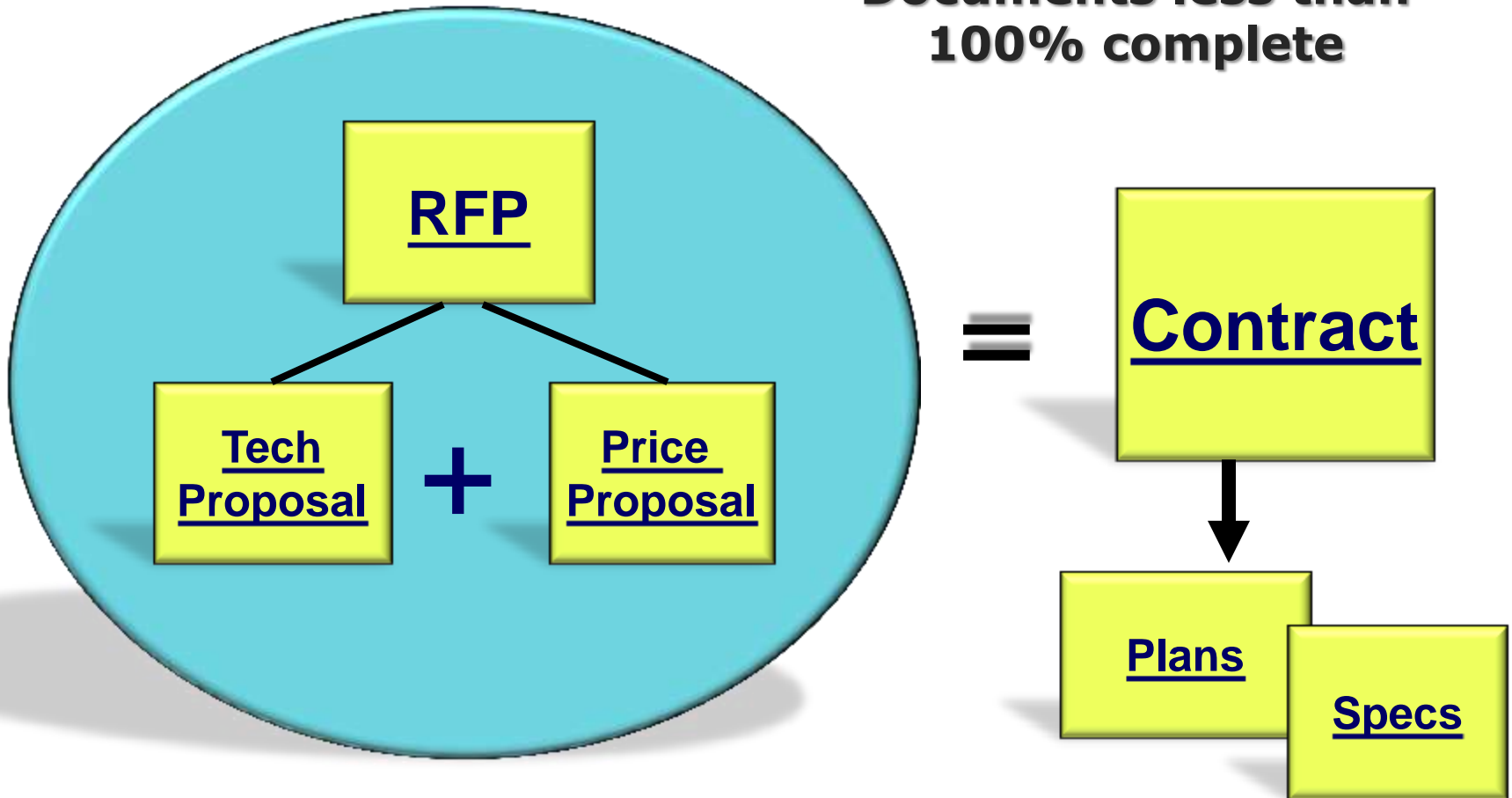
### Typically Low-Bid Procurement



# Design-Build

How Do I Do It?

**Documents less than  
100% complete**



# Project Delivery Methods

CIU/Penn State University Study

<b>Metric</b>	<b>DB vs. DBB</b>	<b>CM@R vs. DBB</b>	<b>DB vs. CM@R</b>
Unit Cost	6.1% lower	1.6% lower	4.5% lower
Construction Speed	12% faster	5.8% faster	7% faster
Delivery Speed	33.5% faster	13.3% faster	23.5% faster
Cost Growth	5.2% less	7.8% more	12.6% less
Schedule Growth	11.4% less	9.2% less	2.2% less





## Case Studies

# Purdue University - Chiller Replacement

## Early Equipment Procurement



- **Project Description**

- Remove 6,250 ton steam turbine
- Install two 3,700 ton chillers
- Increase total capacity by 1,150 tons
- Increase firm capacity by 2,400 tons

- **Schedule**

- Design Start: October 2013
- Construction Start: September 2014
- Completion: May 2015

- **Project Attributes**

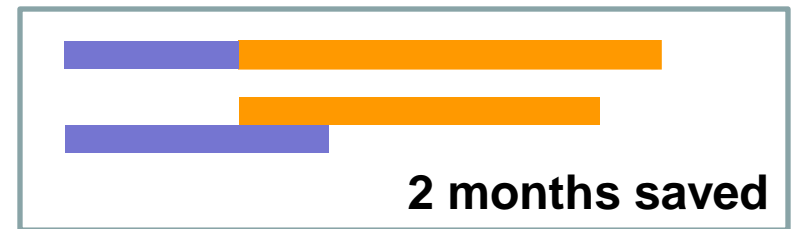
- Early chiller procurement
- 8,000 ton temporary chiller connection
- Meet demand for:
  - Temporary Connections May 2014
  - Permanent Capacity May 2015

# Purdue University - Chiller Replacement

## Early Equipment Procurement

- **Schedule with D-B-B**

- |                 |   |
|-----------------|---|
| – May 2014      | Issue for Bid   |
| – July/Aug 2014 | Approval from Board of Trustees (Award to Contractor) |
| – Sept/Oct 2014 | Approval of chiller shop drawings / place order       |
| – Jan/Feb 2015  | Chiller Delivery                                      |
| – Mar/Apr 2015  | Installation  |
| – May 2015      | Commissioning   |
| – June 2015     | Project Complete                                      |



- **Schedule with Early Procurement**

- |                  |   |
|------------------|---|
| – Dec 2013       | Chiller bids received                                 |
| – May 2014       | Issue Construction for Bid / Chiller order place      |
| – July/Aug 2014  | Approval from Board of Trustees (Award to Contractor) |
| – Fall 2015      | Chiller Delivery                                      |
| – Mar/April 2015 | Commissioning   |
| – April/May 2015 | Project Complete                                      |

# Enwave - Biomedical District Steam Plant

## Design-Build



- **Project Description**

- 210,000 PPH steam
- 900 kW generation

- **Schedule**

- Start: October 2013
- Completion: January 2015

- **Project Attributes**

- Designed to accommodate 20 foot flood waters
- Precast Concrete façade designed to withstand 150 mph winds
- 7 days stand alone island operation





# Enwave - Biomedical District Steam Plant

## Design-Build



- **Process**

- Originally Design-Bid-Build
- Converted to D-B near the end of design
- D-B-B schedule and D-B project schedule are nearly identical

- **Lessons Learned**

- Earlier conversion to design-build decreases construction schedule
- D-B contract has allowed for incorporation of changes during construction w/o modifying the schedule



**Limited time saved**



# Airbus – Powerhouse

## Design-Build

- **Project**

- New plant to produce A320 in US
- Located in Mobile, Alabama

- **Schedule**

- RFQ Dec 2012
- RFP Issued Jan 2013
- Project Complete July 2014

- **Procurement Process**

- Initially DBOOM
- Revised to DBOM (own was removed)
- Design-Build Construction
  - Performance Specifications from Airbus
  - Lump sum GMP to plant operator
  - Mechanical and electrical sub-contractors selected at RFQ stage



# Airbus – Powerhouse

## Design-Build

- **Project Attributes**

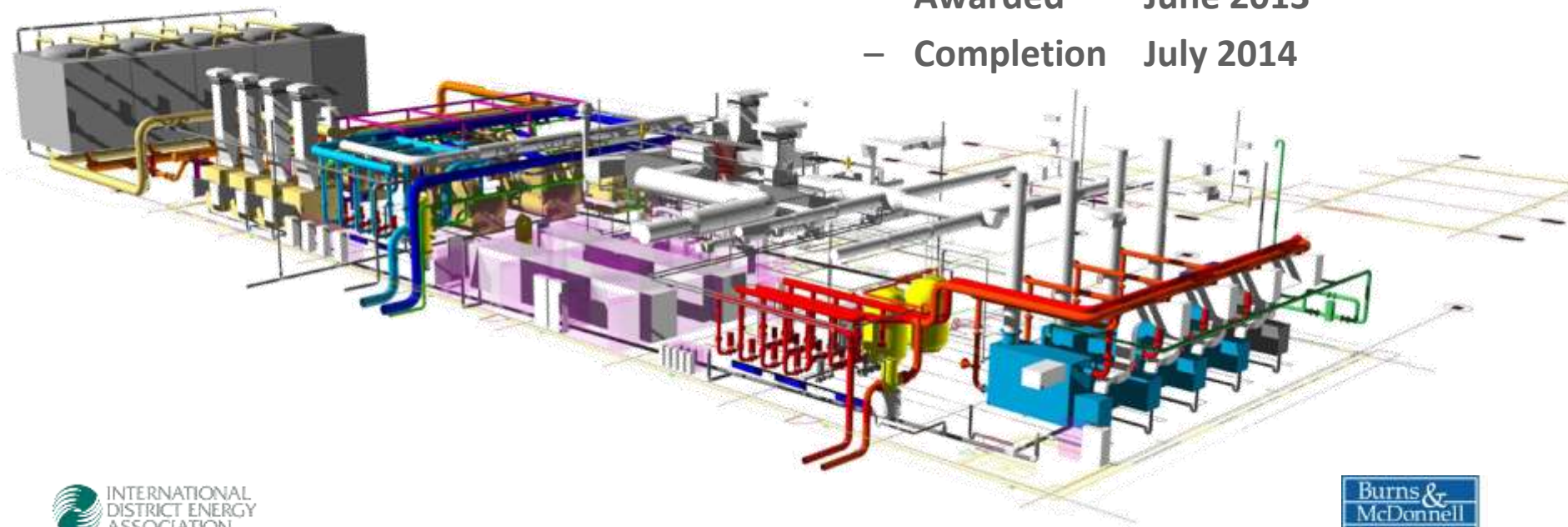
- LEED Gold Certification (LEED Silver target)
- CUP expands with manufacturing
- Tempered equipment bays
- Closed automatic transition switchgear and controls

- **Capacities**

- 4,200 tons chilled water
- 44 MMBH heating water production
- 2000 SCFM compressed air
- Emergency Standby Power

- **Schedule**

- Awarded      June 2013
- Completion    July 2014

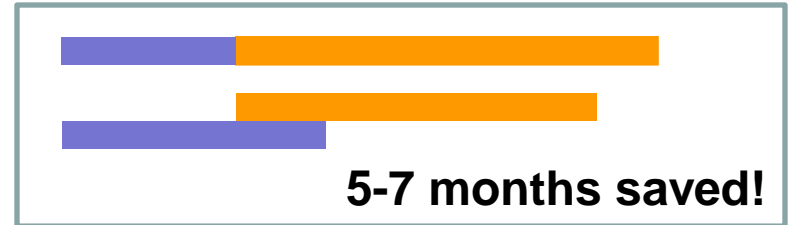


# Airbus – Powerhouse

## Design-Build

- **Schedule Savings**

- D-B-B      About 18-20 months
- D-B                      13 months



- **Best Practices**

- Performance based requirements from Airbus
- Early phase charrette critically important with all stakeholders
- Early MEP sub-contractor involvement
- M&E sub communication with engineers
- Local City of Mobile permit coordinator



# Summary

- There are Many Reasons a Project is Accelerated
- Three Methods to Accelerate
  - Early equipment procurement
  - Construction manager
  - Design-Build
- All options have pros/cons
- Design-build is the fastest
- The right solution is different for every project

## Other Options:

- *Phased Construction Contracts*
- *Commissioning Agents*
- *Permitting Agent (expediter)*

# Questions & Answers

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# Thank You!

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