SWANA
SOLID WASTE ASSOCIATION OF NORTH AMERICA

Welcome to Today's Webinar

From Deciding what to Build to Lessons Learned:

A Mixed Waste Processing case study in Utah

SWANA Webinar

July 14, 2021

WASATCH INTEGRATED waste management district

WASATCH
INTEGRATED
waste management district

About
GBB & Wasatch

GBB

SOLID WASTE

MANAGEMENT

CONSULTANTS

We believe in a world where discarded materials are used as resources rather than wasted.

About Wasatch

www.WIWMD.org

WASATCH INTEGRATED waste management district

- Waste management services to Davis and Morgan Counties and 15 member communities – managing 340,000 total TPY
- Owns/operates a local landfill (limited capacity) w/ drop-off and LFG-to-Energy system
- Green waste recycling and composting (yard debris) – 25,000 TPY
- Re-use store and HHW drop-off
- Owns an alternate landfill (80+ miles away)
- 420 TPD WTE plant (steam supply to Hill Air Force Base) closed May 2017 after 30 Years operation

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About Wasatch

www.WIWMD.org

WASATCH
INTEGRATED
waste management district

Landfill Residential Drop-Off

Composting Operation

Landfill Thrift Store

Admin Building

Wasatch's Changing Paradigm

Wasatch WTE Facility prior to Deconstruction

- WTE System Operations
  - WTE plant started operations in 1987, mostly to supply steam to Hill AFB
  - System was due for major upgrades and refurbishments
  - March 2017 Board elects to close plant due to anticipated loss of steam contract and other costs
  - Increased tonnage to local landfill greatly shortening lifespan

- Wasatch Needs and Goals (SWMP)
  - Reduce Waste to Local Landfill (preserve life for local drop-off)
  - Maintain Control of Waste Management and Limit Cost Increases to Customers
  - Increase Regional Material Diversion through Recycling = Reducing Landfilling in General

Feasibility Analysis

A look at the possibilities

Three Options Considered

Transfer Station Only

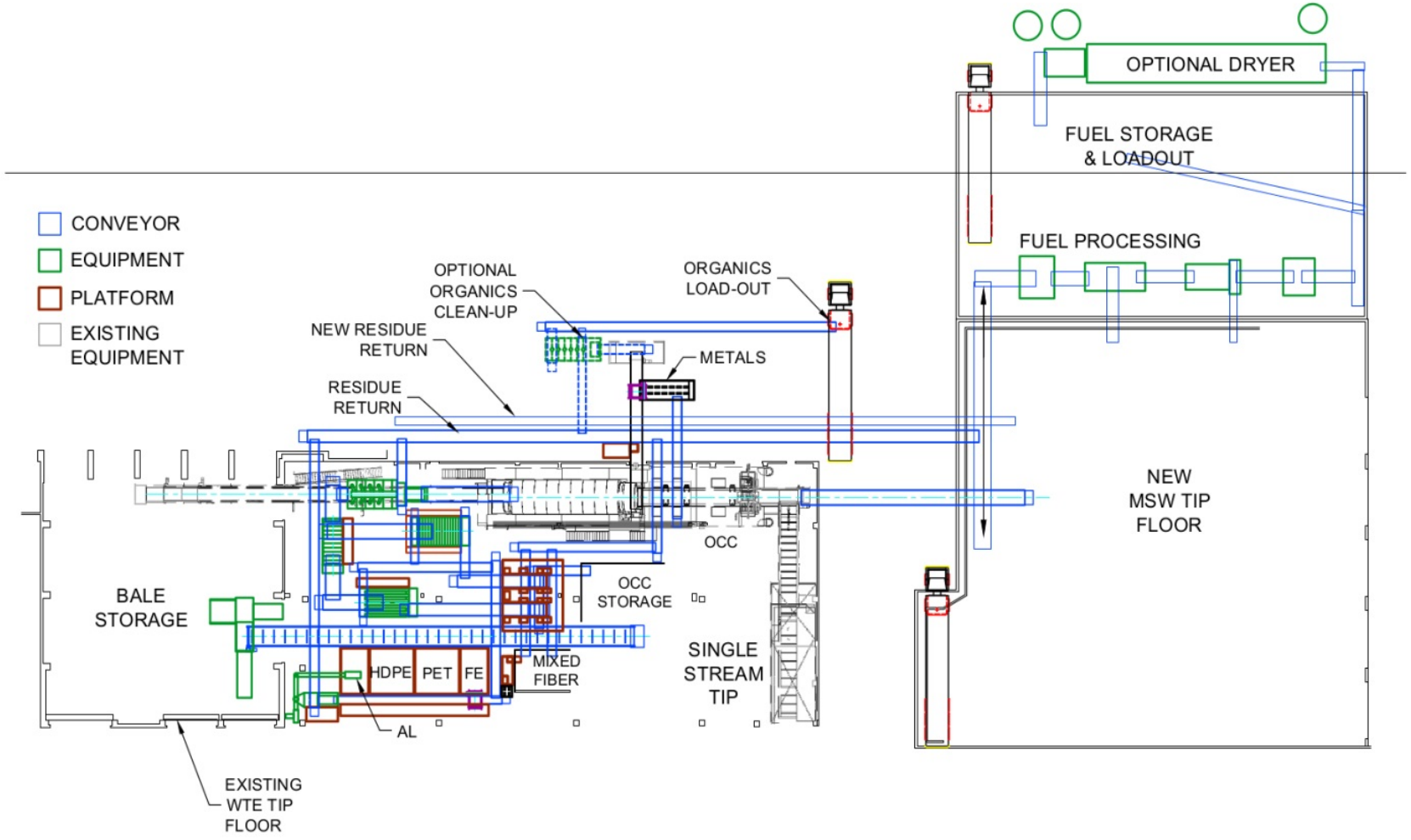
Transfer Station with MWP/MMP to produce recyclable commodities

With Two Sub-Options

Transfer Station with MWP/MMP to recover recyclable commodities and Cement Kiln Fuel

Feasibility Analysis

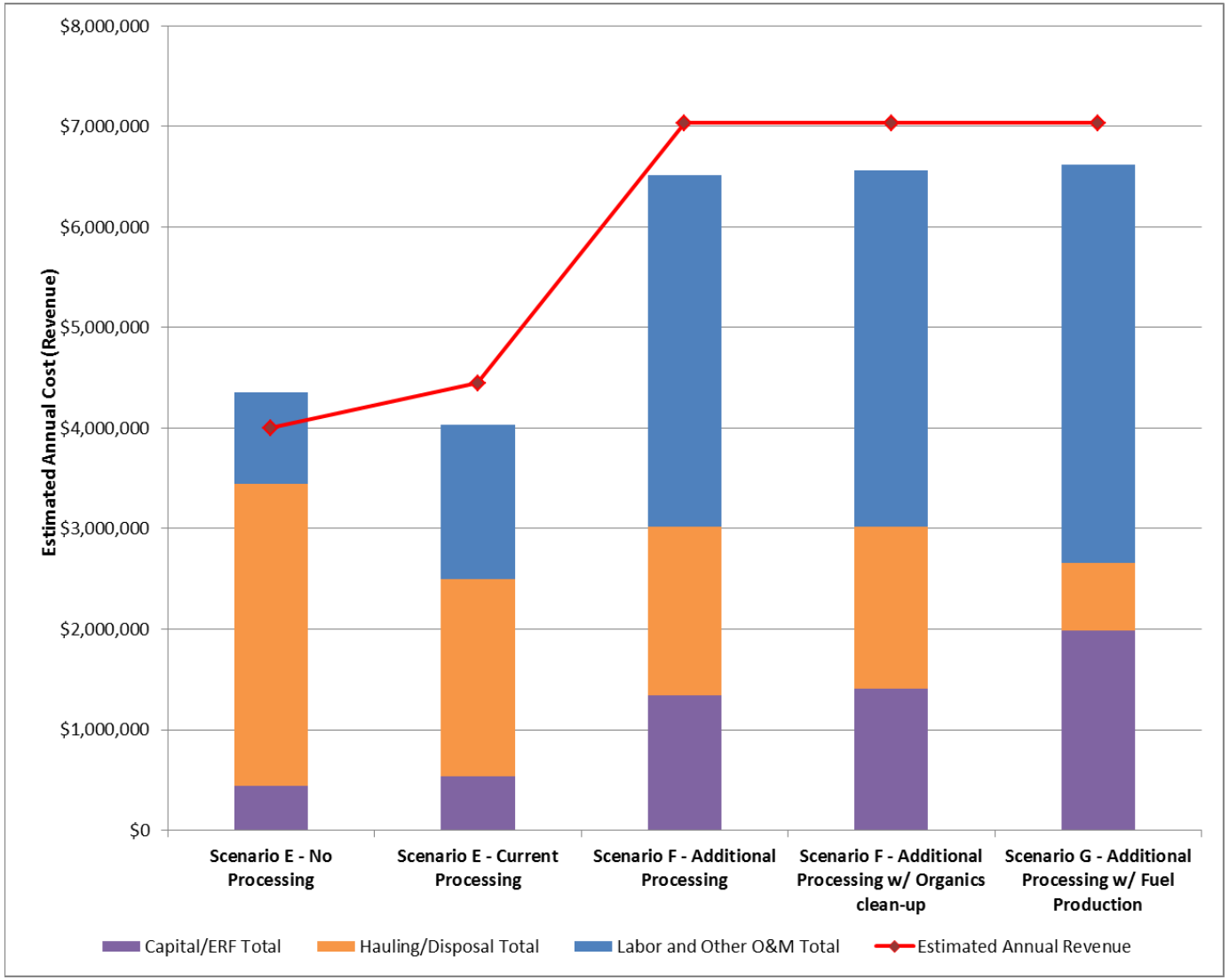
Preliminary Layouts for Feasibility Estimates



Transfer Station with MWP and Fuel Production

Feasibility Analysis

Costing Scenarios



Feasibility Analysis

Financing a New Facility

- Board Approval of Bonding
- Financing Options
  - Reserve Funds in part
  - New – long-term debt
    - Revenue Bonds (tax-exempt bonding status?)
    - Asset-secured financing
  - Private Partnerships – Offtakers purchase support for the equipment.
- Select Financial Advisor, Investment Banker and Bond Counsel (to place debt requirements)
- Present to Bond Rating Agency
  - Tell a compelling story
  - Firm Revenue Streams

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Procurement Process

The RFP

Procurement Process

The RFP Process

- RFP approach: Conventional (contracted separate), Design/Build, Design/Build/Operate
- Compiling the RFP Team and deciding on criteria
- Design/Build needs for the RFP (BOD)
  - Approximate Budget
  - Building if known, (limits if not known)
  - Outputs desired and location of outputs, if known
  - Detailed Composition of material to be processed
  - System Guarantees
  - System Reporting Needs
  - Building and Employee Heating/Cooling plans
  - Responsibilities
- Encourage system versatility/flexibility
- Distribution and time for adequate answers
- Scoring responses/Interviews/Finalizing first choice

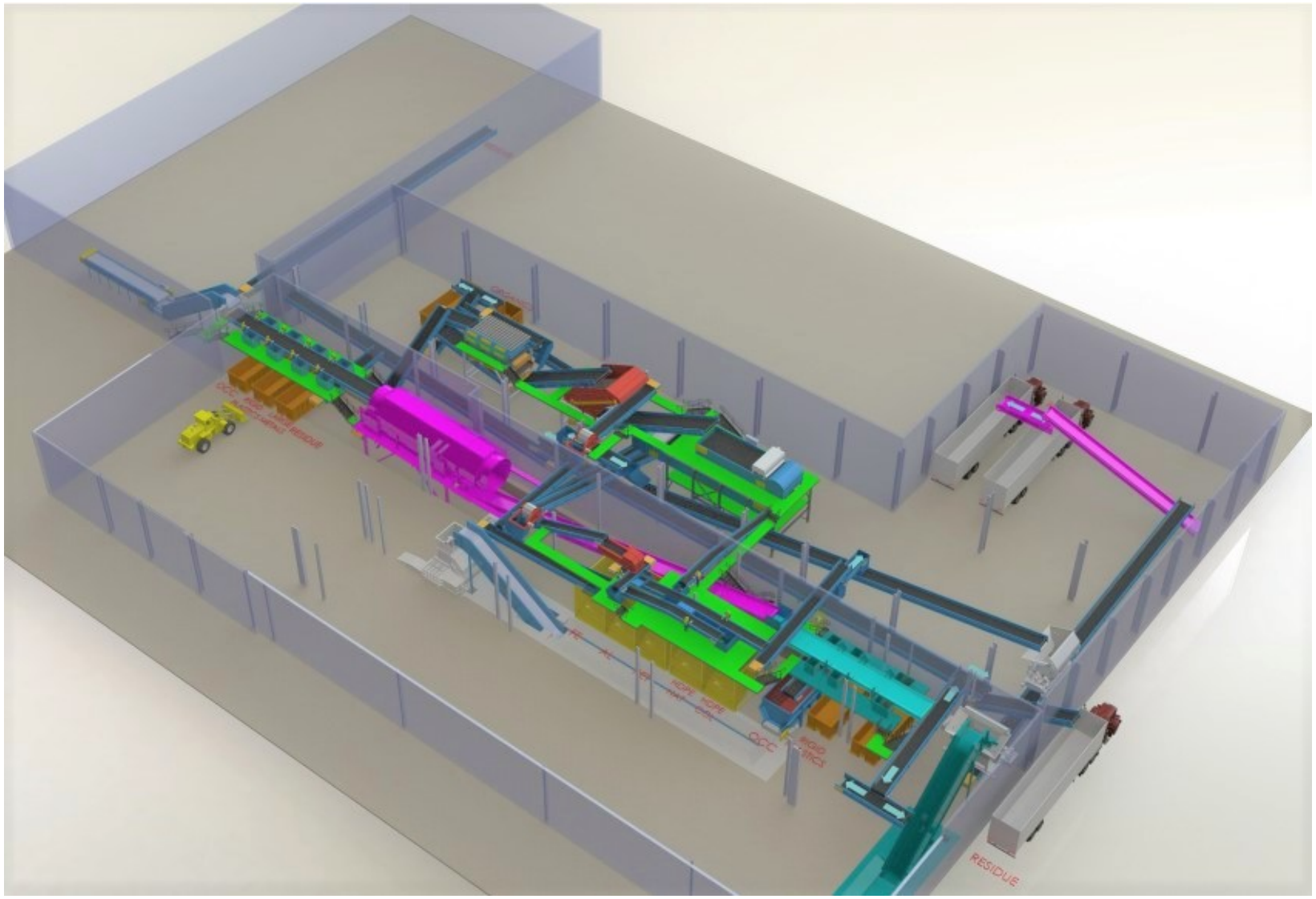
Procurement Process

Proposal Design to Final Contract Design

- Getting a second opinion on Proposed Design. Does the Proposal:
  - Fulfill the needs of processing and recovering materials?
  - Create the appropriate outputs?
  - Have design issues/bottlenecks that need to be addressed?
  - Identify potential hazards/confined spaces?
  - Have adequate maintenance access?
- Reuse of Existing Equipment/Buildings/Pits
- Finalizing testing protocol for system performance
- Finalizing Equipment/Building Ft^2/Pricing
- Final Contract design is still conceptual but should allow for beginning of next steps

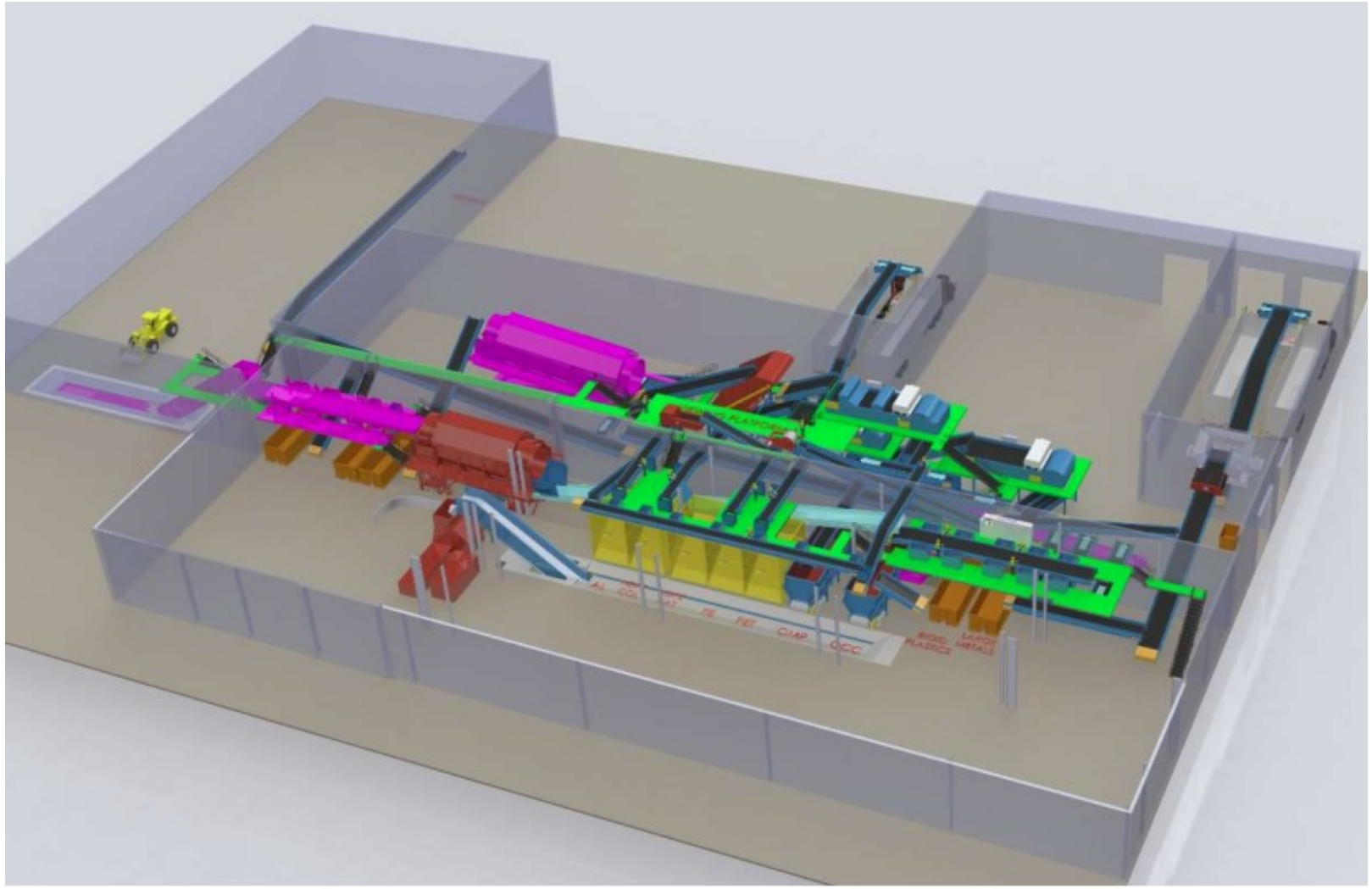
Procurement Process

Chosen Proposal Design



Procurement Process

Final Contract Design



Procurement Process

Signed Contract

- Other possible negotiation points-
  - Payment Schedules
  - Performance Guarantees, Warranties, and Testing Protocol
  - Spare Parts Inventory Supplied with System
  - Break-in/Startup Support Period
  - Construction Sequencing
  - Timing due to production capabilities, weather, etc..
  - Performance Schedule
  - Liquidated Damages
  - Insurance

Design & Construction

From Signed Contract to Start-up

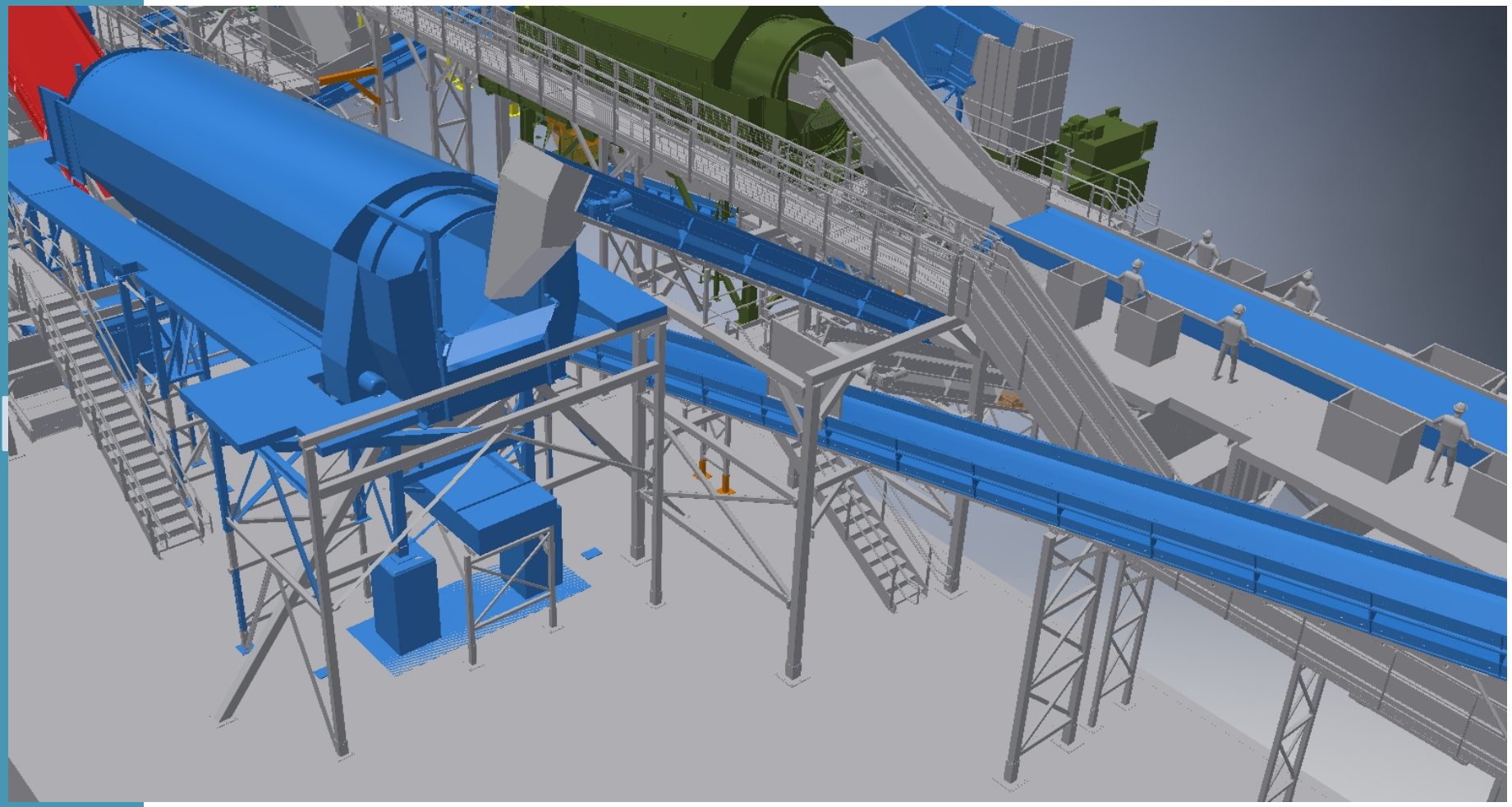
Design & Construction

Contract Design to Final Design to Engineered Design

- Allow adequate time to create the final conceptual design that will be basis of engineered design
- Include necessary details not present in proposal design such as:
  - Final equipment locations
  - Access and Egress locations (stairs, etc.)
  - Offices and Worker accommodations
  - Building Doors and equipment pass-through locations
  - Vehicle and maintenance access lanes
  - Pits and other floor modifications
  - Building columns and footer locations
  - Sprinkler Riser room location/Electrical locations
  - Compressor Location(s)
- Coordinating Equipment Vendor and Building Designer

Design & Construction

Engineering Design

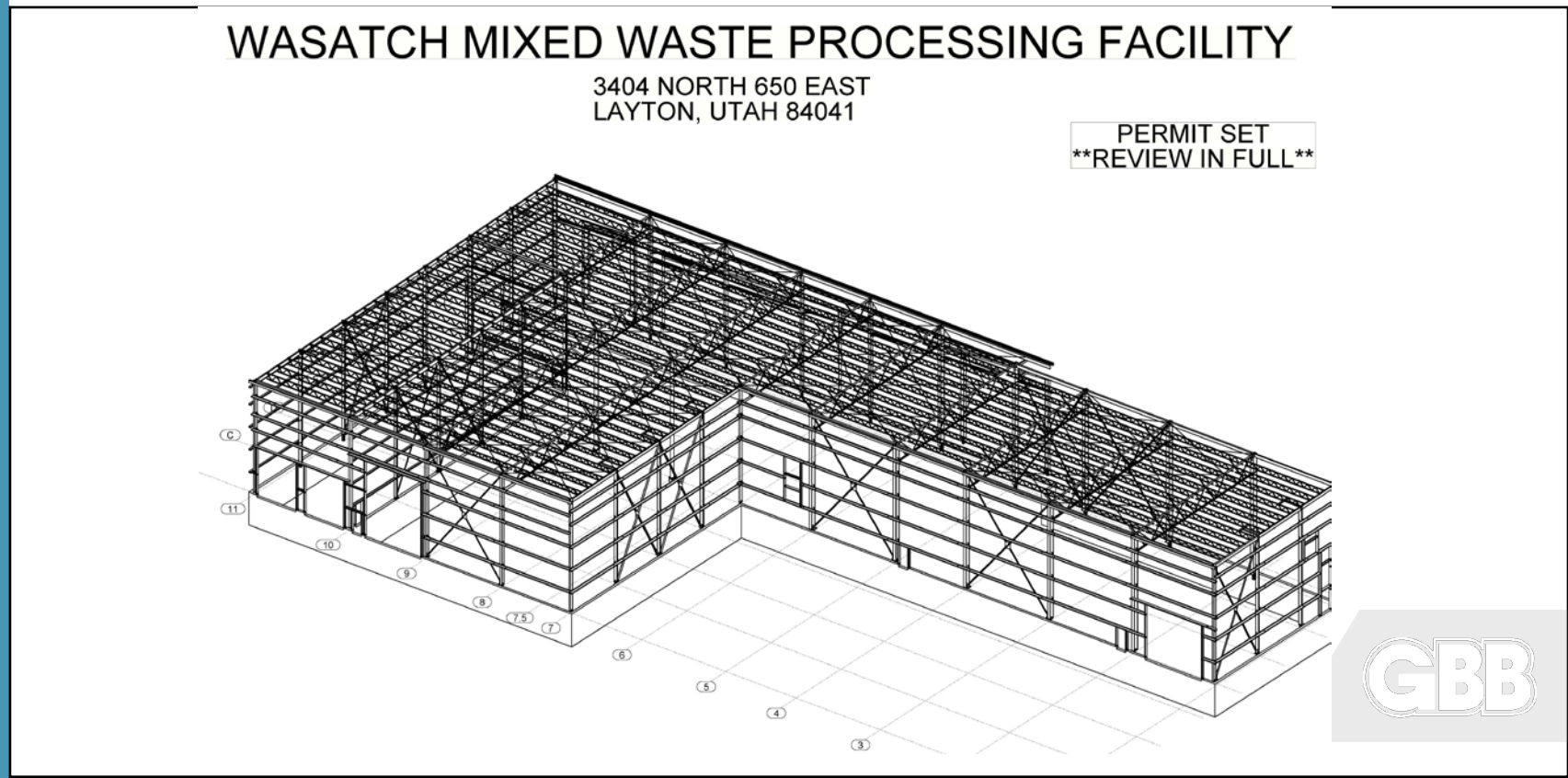


Engineered Design with Supports

Design & Construction

Final Permitting

- Prior to RFP
  - Prior Operating Permits (Solid Waste, Leachate, Stormwater, Air, etc….) for existing system
- Prior to Contract/Construction
  - Building and Construction Permits
- Prior to Start-Up
  - Fire and Occupancy Permits (including Temporary)

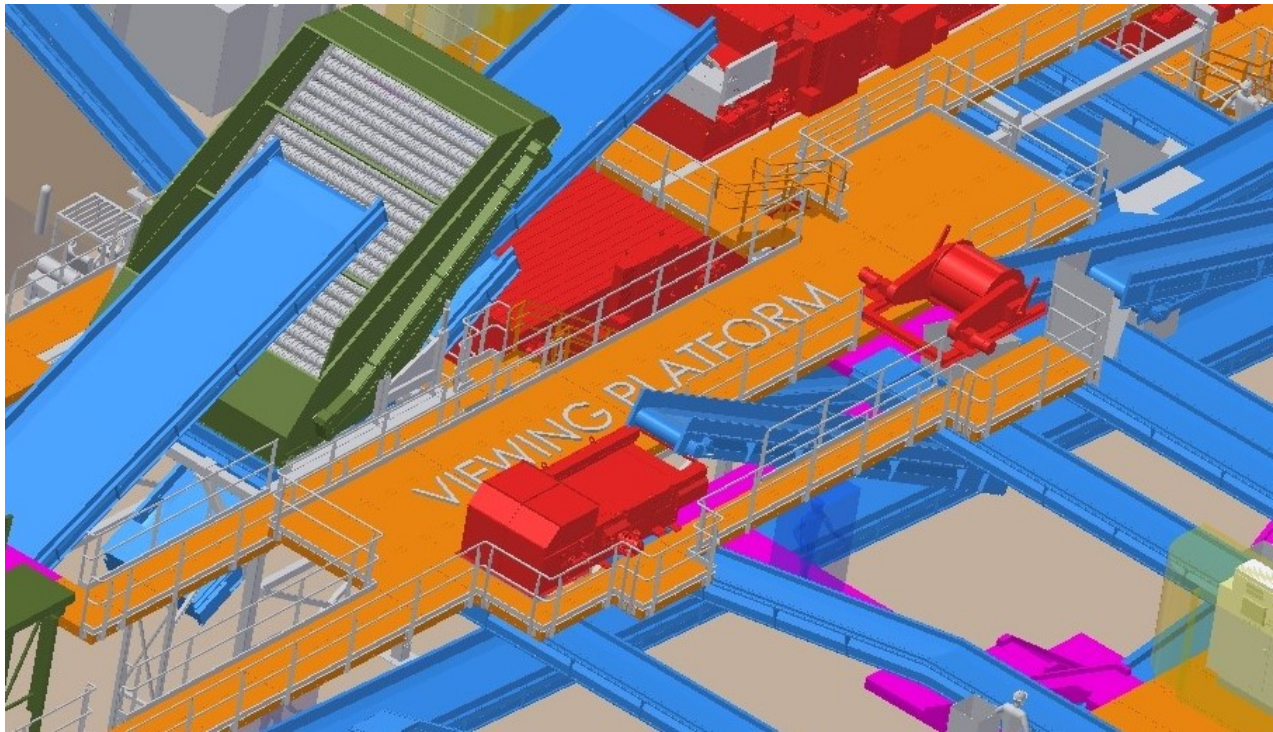


Sprinkler Riser Room

Other Considerations (usually by Owner)

- Infrastructure (Electric, Water, Sewer, Other)
- Traffic, Scales, Fire Suppression (Sprinklers, Deluge, Fire Rover)
- Noise, Trash, Education Access
- Machine Vision
- Maintenance needs
  - Electric or Air outlets on equipment for cleaning
  - Hoists and Gantries for heavy shafts/motors etc..
  - Lift points for heavy equipment access

Educational Viewing Platform



Design & Construction

Material and Offtake Agreements

- (Incoming Material & Markets for commodities or off-takers of products)
- Rework incoming material contracts as necessary
  - Warn of logistics changes, if necessary, during construction
- Identify and acquire offtake agreements
  - Residue
  - Fines/Organics
  - Recyclable Commodities
  - Fuel (a proportion and mix of recyclable commodities and non- recoverable recyclables
- Backup Agreements for Transfer and Disposal

Design & Construction

Equipment Installation

- Necessary Infrastructure (Electrical, Footings, Ventilation, Etc.)
- Room for Staging
- Identifying Critical Installs (Blocking other work/installs)
- Inadvertent Confined Spaces

Change Orders

Total of 39 Change Orders – 5.5% of Original Contract

Back Side of New Buildings

Examples include:

- Snow Drift Modifications
- Fire Suppression Additions
- Additional Site Grading and Soft Spot Repair
- Added Asphalt and Changes in Concrete Needs
- Additional OCC Transfer Conveyor
- Additional Downspout Drainage

New OCC Collection Conveyor

Start-Up and System Testing

Team Training, Punch Lists and Final Testing and Commissioning

System Startup & Testing

Training and System Review

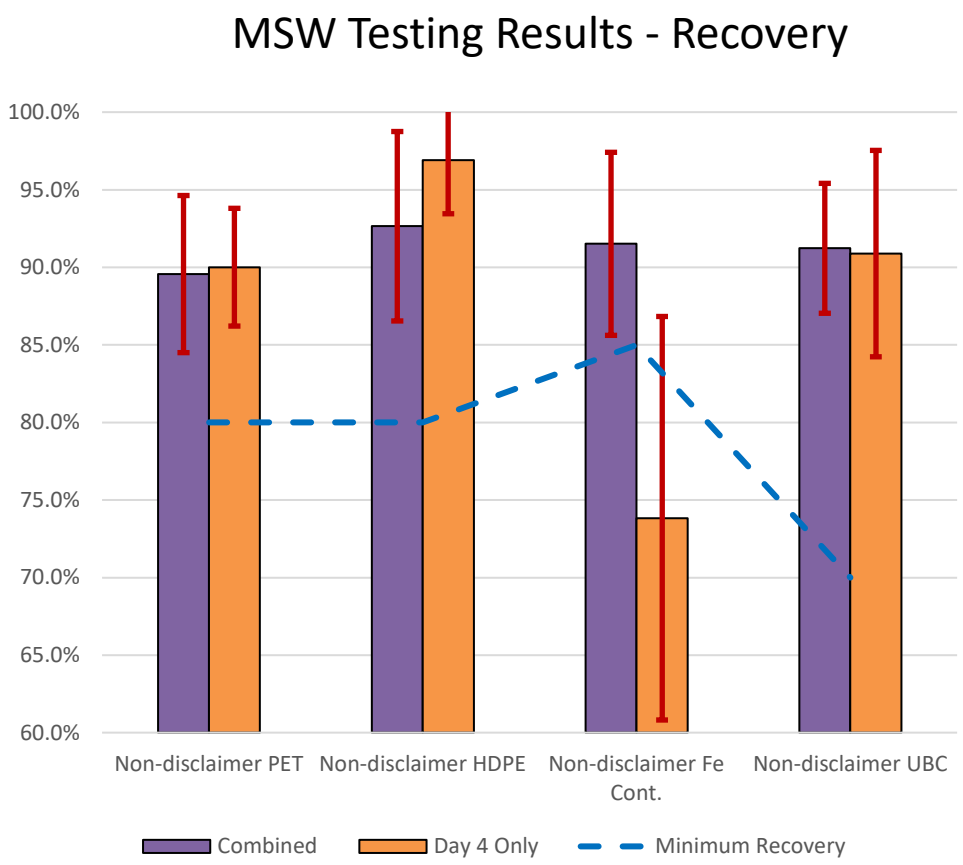
- Team training
- Requires input from operator and vendor with an emphasis on the following:
  - Safety
  - Maintenance
  - Operations
  - System Variables

Pre-Sort Team Members

Testing

Final System Testing

- Robust testing with statistical analysis (Over 4 Days)
- Recommend third party testing (not Vendor)
- Coordination between vendor and operator needed for smooth tests
- Will interrupt normal processing at times so logistics with haulers may be needed



Test Sample Sorting Area

Public Education & Preliminary Results

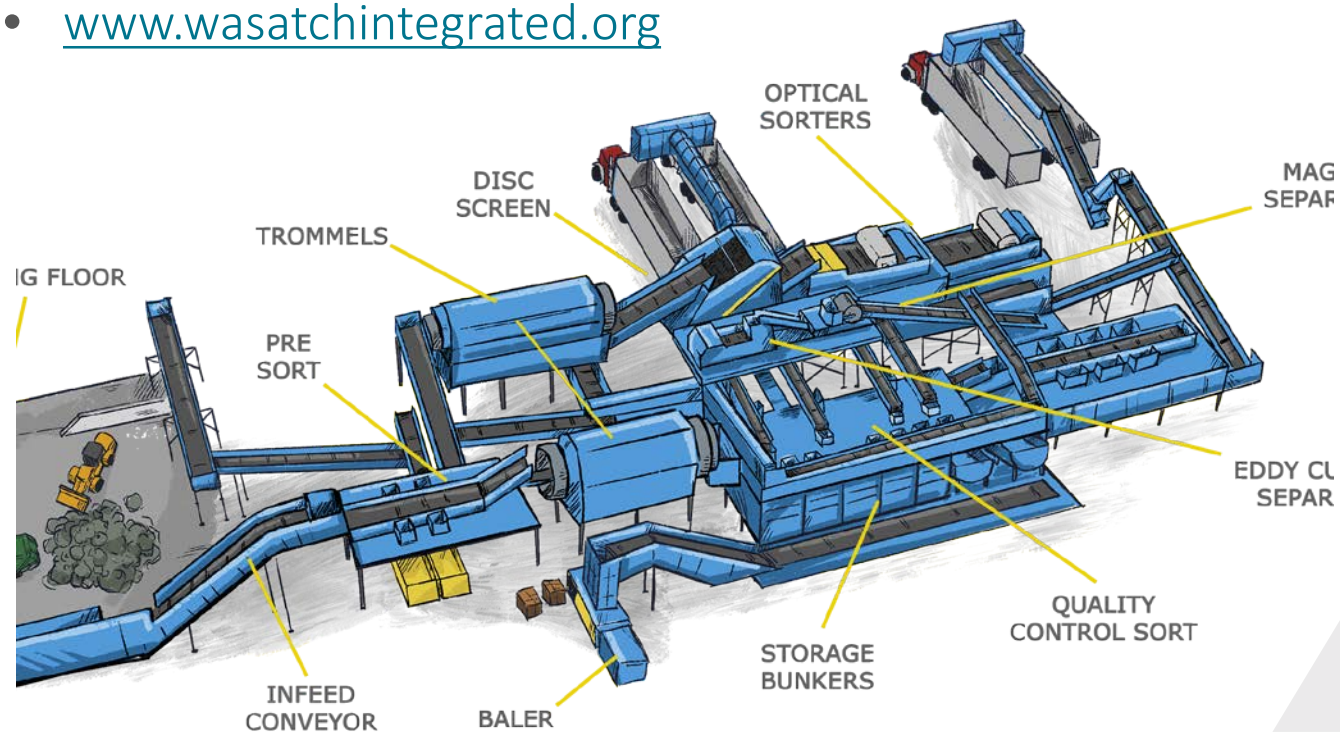
Involving the Community

Public Education

Outreach, even during the COVID-19 pandemic:

- New Website, Saltworksdigital.com
- Web videos posted to website (Construction, operations, etc.)
- Robust and accessible education materials available on website
  Which focus on the why and how
- Recycling/Diversion counters
- Tours / Virtual Tours to Students / Education Center
- Press releases announced on Website
- www.wasatchintegrated.org

Stylized System Layout



Preliminary Results:

- Transfer Operations Working Well
  - Transferring up to 700 tpd
- Processing Equipment Performing Well
  - Currently running about 85 to 90% availability
- Producing high quality recyclables moving to market
  - 3.5% diversion
- Producing well accepted feedstock for cement plant
  - 7.5% diversion
- Still working on organics offtake
  - Potential for 20% to 40% diversion

Next Steps

Into the Future:

- Mattress Processing
- RDF Densification
- Organics/Fines Outlets
- Potential source for alternative conversion experimentation with Universities or other entities

Fines and Organics Outfeed

Open Q&A

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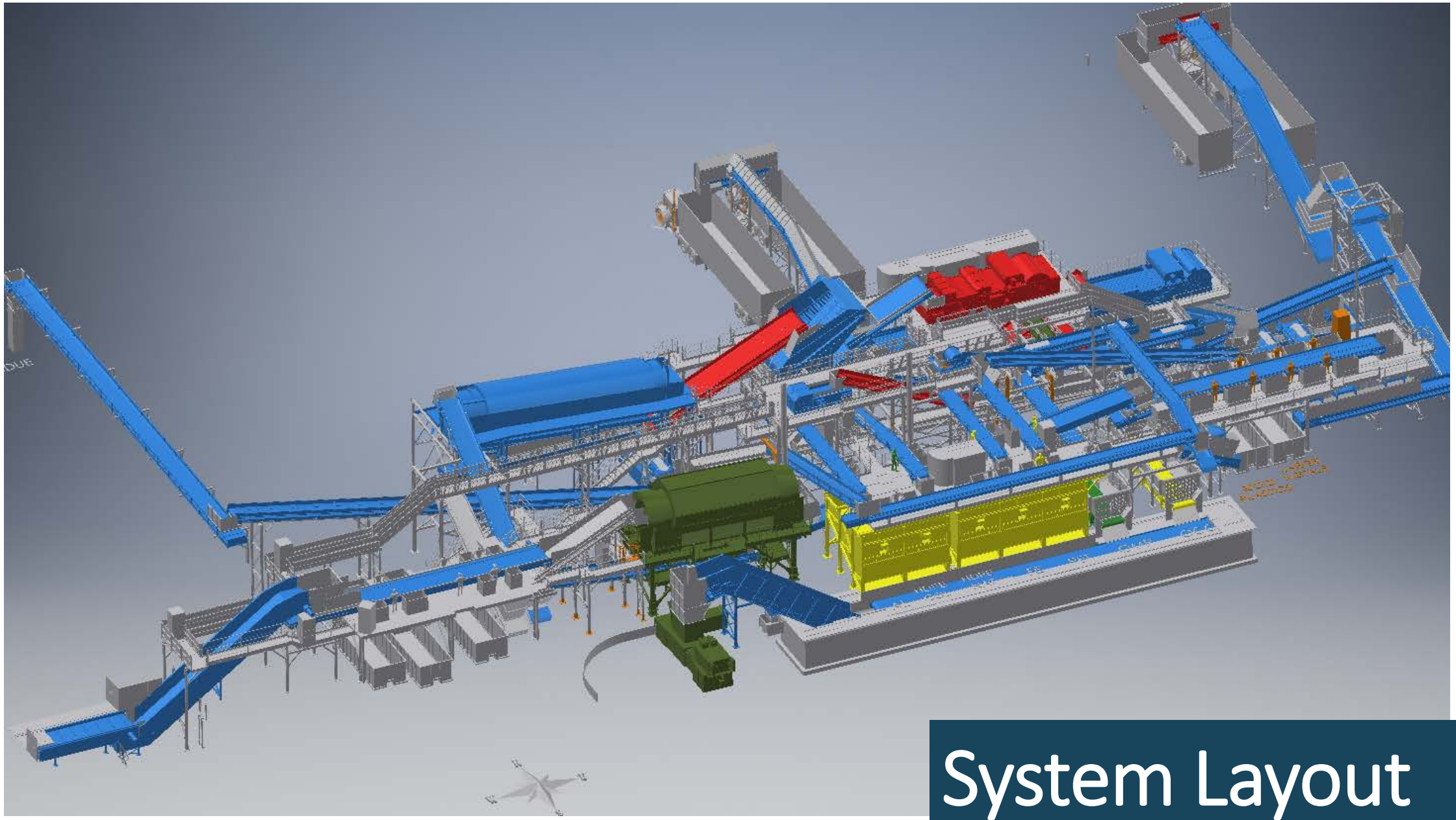
Time for your Questions



System Layout