Alternative Project Delivery: Two-Step Progressive Design-Build
quasar at a Glance

Anaerobic Digesters Complete/Under Construction

19

1.7 MILLION TONS of organic waste

Quasar HQ in Cleveland

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Design. Build. Own. Operate. anaerobic digestion facilities that produce renewable energy from organic waste

Feasibility/Project Development Design Construct Commission Operation & Maintenance

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Building an Industry

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Variety of Applications

INDUSTRIAL

AGRICULTURAL

MUNICIPAL

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The Utility of the Future transforms itself into a manager of valuable resources, a partner in local economic development, and a member of the watershed community seeking to deliver maximum environmental benefits at the least cost to society.

It does this by:

- reclaiming and reusing water
- extracting and finding commercial uses for nutrients
- capturing heat and latent energy in biosolids

*The Water Resources Utility of the Future: A Blueprint for Action* - NACWA, WERF, and WEF
June 30, 2011, Governor Kasich signed House Bill 15

1st changes in state's method of performing public construction in more than 134 years

This Ohio Construction Reform (OCR) changed how public improvement projects are completed - allows for alternative construction delivery methods (Construction Manager at Risk and Design Build)

Each public authority now has the option to select the best delivery method for their specific project

A single contract holder has overall responsibility for project completion, offers owner the opportunity to reduce cost of project and project completion time

Owner is no longer responsible for coordinating activities of all trade contractors on-site.

There can be a pre-negotiated guaranteed maximum price

Alternative delivery method options have been used extensively over the past half century within the private and public sector outside Ohio
Design-Build Ohio Construction Reform

- Reform created due to under performing building and renovation projects
- Shifts more of the risk of a dispute regarding the responsibility for a failure onto the design-builder and away from the owner
- Requires every public owner who wishes to use design-build to engage a criteria architect or criteria engineer to assist the owner
  - Identifying the nature of the project
  - Performance goals to prepare design criteria for design-build firms to bid on or fulfil RFQs and RFPs
- Ohio Revised Code 153.65 – 153.70 – Guidelines for professional design pre-project process
## Project Delivery

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<thead>
<tr>
<th></th>
<th>Design-Build</th>
<th>Design-Bid-Build</th>
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<tbody>
<tr>
<td><strong>Contracts</strong></td>
<td>▪ Only requires one contract rather than multiple contracts (architect / municipal engineer / general contractor)</td>
<td>▪ Separate entities required for design and construction; the engineer and the construction company are not connected until after the bid is released.</td>
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<tr>
<td><strong>Construction Start</strong></td>
<td>▪ Can start certain construction activities while final designs are being completed</td>
<td>▪ Construction cannot start until the final design is completed, bid, and the job awarded.</td>
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<tr>
<td><strong>RFP</strong></td>
<td>▪ Fastest path to a completed project by simply eliminating the RFP writing, bidding, and bid vetting process</td>
<td>▪ RFP required and selection process is often lengthy.</td>
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<td><strong># of Companies Involved</strong></td>
<td>▪ Less risky to the owner – having only one entity involved eliminates finger pointing</td>
<td>▪ Contracts between the designer and general contractor are separate; therefore the owner has liability for anything that goes wrong; owner serves as mediator for any design and construction issues that occur for each party.</td>
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<td>▪ Integrated services by combining design &amp; construction services eliminates conflicts that can arise.</td>
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<tr>
<td><strong>Design Improvements</strong></td>
<td>▪ Design can include the latest improvements into the project</td>
<td>▪ Owner owns the liability for the design, general contractor is limited in implementing design improvements.</td>
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<tr>
<td><strong>Design Changes</strong></td>
<td>▪ Design-build contractor can be open to design changes desired by the owner.</td>
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Collaborative Project Delivery Summary

- Eliminates finger pointing between design professional and general contractor
- Greater collaboration between owner and contractor
- Reduced chance of change orders and eliminate budget run-overs
- Fully integrated team equally committed to controlling costs
- Improved innovation
- Identifying and mitigating risks early enough to provide a more cost-efficient project in a shorter time
Design-Build Contracts

Peer reviewed – requires very little negotiation

DBIA Contracts
- Provides a library of Design-Build Contract options, from preliminary agreements to final payments
- Documents can be edited to suit specific needs of project.

ConsensusDocs
- Provides a catalog of contract document series
- Online collaboration to edit contracts, customizable
- Easy to create contracts with Owners, Subcontractors, etc.
- Continuously updated to keep up with construction practices and legal updates
Lucas County Project Delivery

Lucas County generates Overarching Project Criteria

Lucas County Publishes Request for Qualifications

RFQ's Received; County Selects D-B Firm for Preliminary Design Agreement

DBIA 520 Agreement - Preliminary Design Agreement

- Goals of Agreement
  - 60% Design
  - GMP

DBIA 530 Agreement - Cost Plus Fee with a Guaranteed Maximum Price

DBIA 535 Agreement - General Conditions of Contract
Goal of the Project:

- Upgrade/Retrofit 4 digesters to improve performance and extend the life of their AD facility
- Add co-digestion system of food waste and FOG to increase biogas production
- Add CHP system to generate 1+MW of electricity
Lucas County, Ohio - Scope of Project

- Project started as digester upgrades, evolved to full codigestion project to make plant energy neutral (1.5 MW)
- Feedstocks include Lucas Co. biosolids and regional food waste, biosolids and FOG
- Installation/Construction of New
  - Centrifuges and centrifuge building
  - Sludge storage building
  - Fixed and Flexible membrane roofs
  - Solids/liquids receiving
  - Mixing, flare, heat exchangers, and CHPs
  - Process piping, electrical, etc.
  - Front end Class A process (Lucas Co. currently produces Class B)

Long term, quasar will be contracted by Lucas Co. to manage the incoming biomass to the plant.
Lucas County - Projected Outcome

Once complete, the new **energy neutral** Lucas County digester will

- Provide the plant with a contingency plan for biosolids processing
- Save over $700,000 per year in energy costs
- Produce $128,000 worth of sellable RECs annually
- Generate $1,240,000 in revenue from tipping fees
- New system will produce Class A solids with fewer disposal regulations
Goal of the Project:

- EORWA entered into a design-build contract to develop a contingency plan for a failure of the egg-shaped digester and to meet a sustainability goal of net-zero energy consumption.
- Co-digestion as an opportunity to fund capital improvements through utility savings and tip fees instead of increasing rates.
EORWA Bellaire, Ohio - Scope of Project

- Project started as a full codigestion project to make plant energy neutral
- Feedstocks include regional municipal plant biosolids and regional food waste and FOG
- Installation/Construction of New:
  - Microturbine to make plant energy neutral
  - Flexible membrane roofs
  - Solids/liquids receiving
  - Mixing, flare, heat exchangers
  - Process piping, electrical, etc.
  - Front end Class A process (Currently produces Class B)

Long term, quasar will be contracted by EORWA to manage the incoming biomass to the plant.
Once complete, the new **energy neutral** EORWA digester will

- Combined, the existing egg shaped digester and the new system can generate 333 kW – achieving energy neutrality for EORWA!
- Provide the plant with a contingency plan for biosolids processing
- Save over $145,000 per year in energy costs
- Generate $570,000 in revenue from tipping fees
- Have an estimated payback period of 7.5 years
- Keep utility rates stable