



Alternative Project Delivery: Two-Step Progressive Design-Build

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quasar at a Glance



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**Anaerobic
Digesters
Complete/
Under
Constructio**



DESIGN. anaerobic digestion facilities
BUILD. that produce renewable
OWN. energy from organic waste
OPERATE.

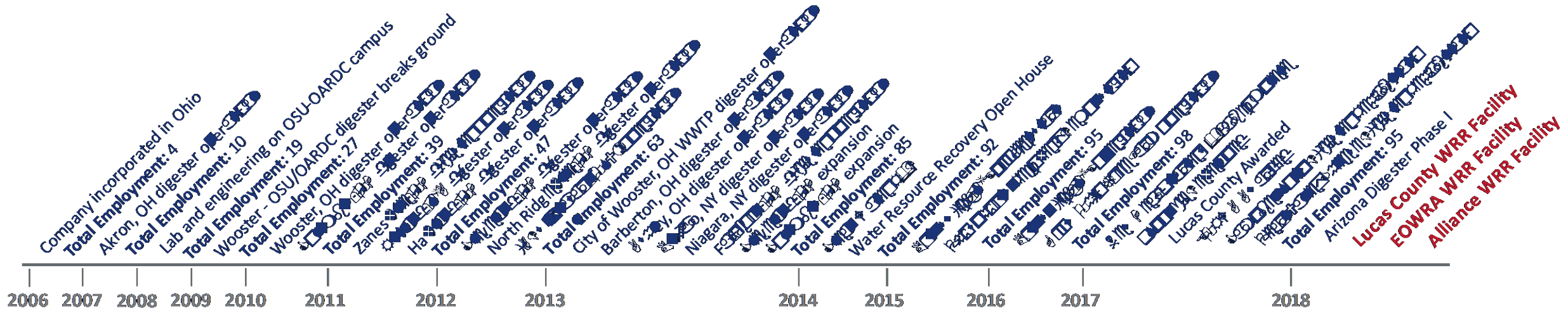


1.7
MILLION TONS
of organic waste



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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

“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



Design-Build Ohio Construction Reform

- 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

	Design-Build	Design-Bid-Build
Contracts	<ul style="list-style-type: none"> Only requires one contract rather than multiple contracts (architect / municipal engineer / general contractor) 	<ul style="list-style-type: none"> Separate entities required for design and construction; the engineer and the construction company are not connected until after the bid is released.
Construction Start	<ul style="list-style-type: none"> Can start certain construction activities while final designs are being completed 	<ul style="list-style-type: none"> Construction cannot start until the final design is completed, bid, and the job awarded.
RFP	<ul style="list-style-type: none"> Fastest path to a completed project by simply eliminating the RFP writing, bidding, and bid vetting process 	<ul style="list-style-type: none"> RFP required and selection process is often lengthy.
# of Companies Involved	<ul style="list-style-type: none"> Less risky to the owner – having only one entity involved eliminates finger pointing Integrated services by combining design & construction services eliminates conflicts that can arise. 	<ul style="list-style-type: none"> 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.
Design Improvements	<ul style="list-style-type: none"> Design can include the latest improvements into the project 	<ul style="list-style-type: none"> Owner owns the liability for the design, general contractor is limited in implementing design improvements.
Design Changes	<ul style="list-style-type: none"> Design-build contractor can be open to design changes desired by the owner. 	

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

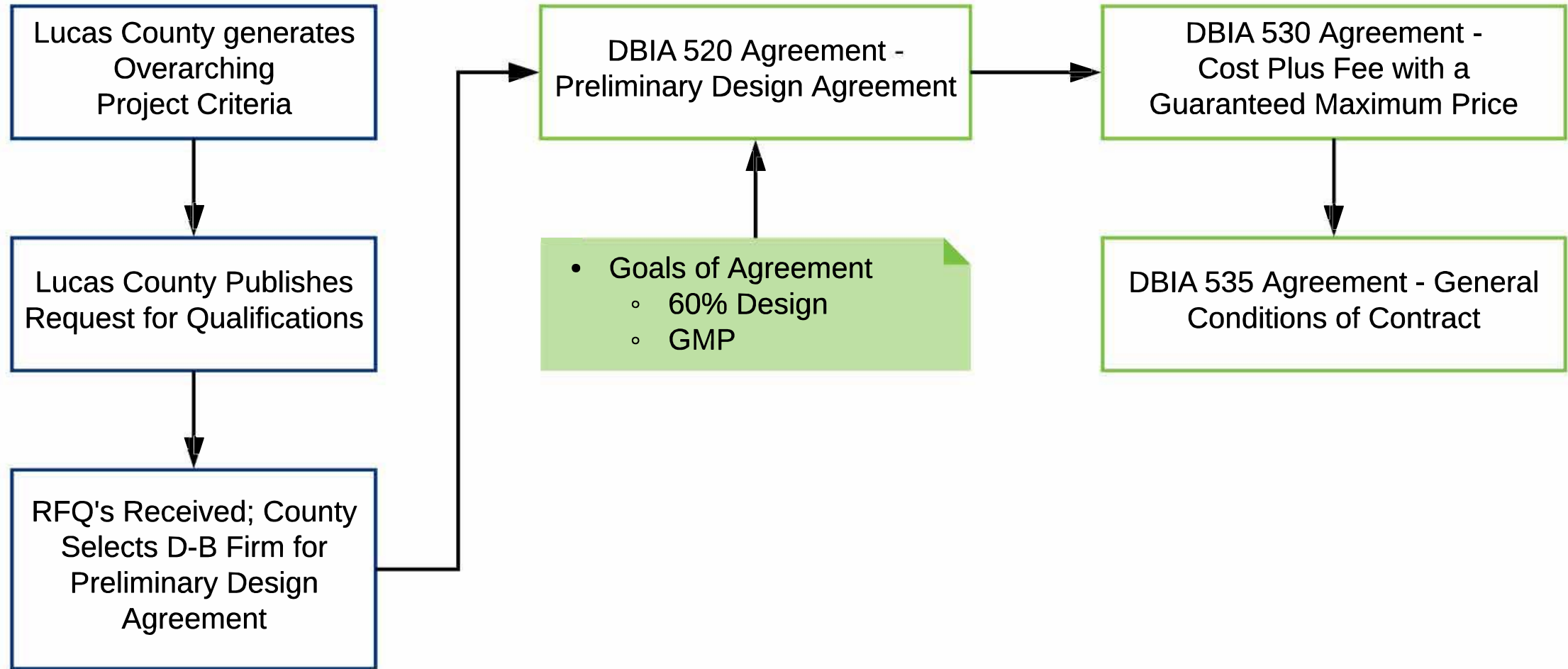
- Provides a library of Design-Build Contract options, from preliminary agreements to final payments
- Documents can be edited to suit specific needs of project.

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 Resource Recovery Facility

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.

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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



East Ohio Recovery Water Authority (EORWA) - Bellaire, Ohio

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.

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EORWA Bellaire, Ohio - Projected Outcome

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

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THANK YOU.
QUESTIONS?



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