

Redeveloping Brownfield Sites in Minnesota

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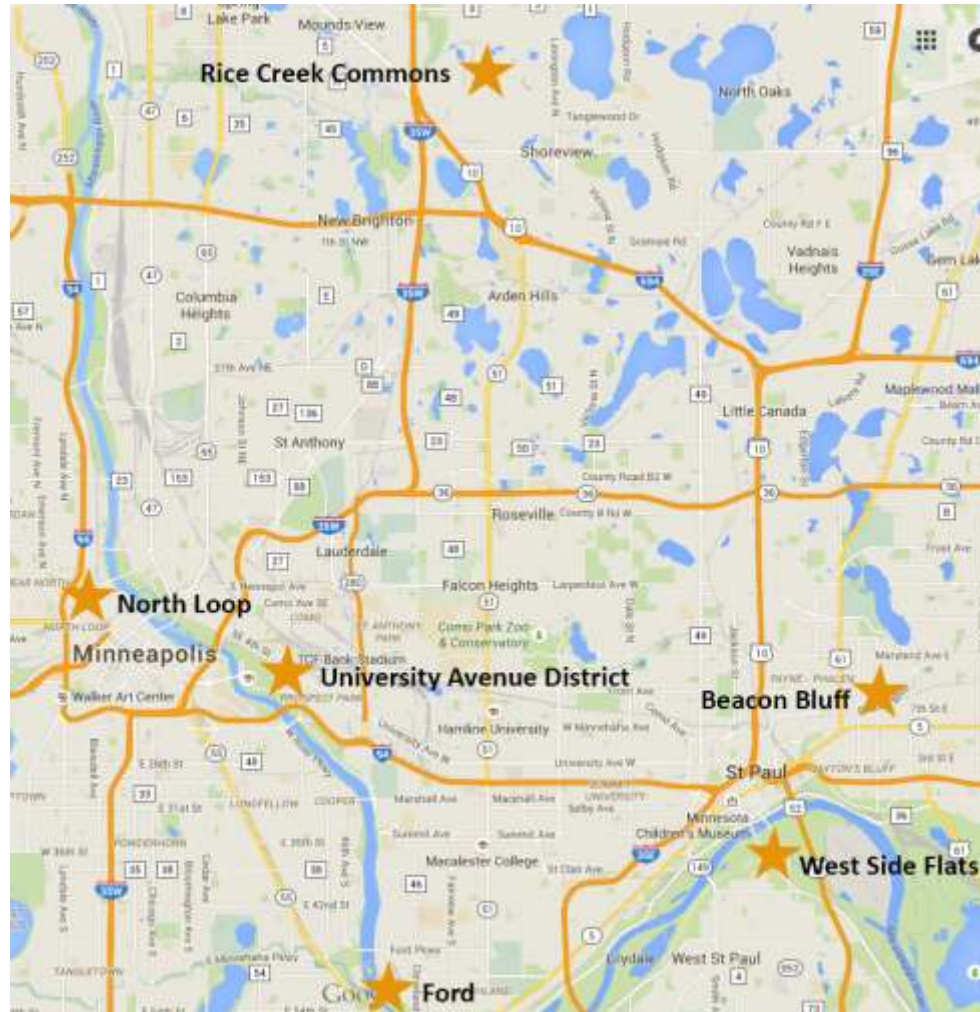


Common Themes

- Partnership
- Set a common vision
- Leverage local resources
- Leverage existing assets
- One size does not fit all
- Look beyond the boundaries
- Energy systems for the district
- Look to the next generation of district energy



Upcoming Redevelopment in Minnesota



Ever-Green Energy

www.ever-greenenergy.com

Rice Creek Commons (Arden Hills, MN)

- 427 acre site
- Munitions factory developed in support of WWII
- 15 minutes from downtown Minneapolis and St. Paul



Photo credit: Hennepin County Library

RCC Remediation

- 47 miles of material removed
- 300,000 tons of concrete removed
- 90% of materials recycled



Photo credit: Ramsey County

RCC Redevelopment Plan

Arden
Hills Army
Training
Site
(AHATS)



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RCC's Energy Vision

TCAAP will be a vibrant development that leverages long-term energy conservation and resilience to attract investment and partnership, and achieves sustainable benefits for Arden Hills and the surrounding community.



RCC's Guiding Principles

- Establish TCAAP as a **national model** for development of integrated energy systems.
- Develop a **resilient community** for energy and other utilities.
- Implement **infrastructure** solutions that are **flexible and scalable** over the next 50 years.
- Deliver a model of efficient energy and water usage that **minimizes TCAAP's impact on the environment.**
- Create an **economically competitive** and attractive environment for developers and businesses.



MN National Guard (AHATS) Considerations

- Energy conservation & GHG emission reduction
- Net-zero in energy, water, and waste
- Resiliency in periods of grid outage, including the ability to disconnect from larger grid
- Land-use must provide benefit to AHATS
- Development must not intrude or obstruct from AHATS mission
- Preferred that a third party finances and operates

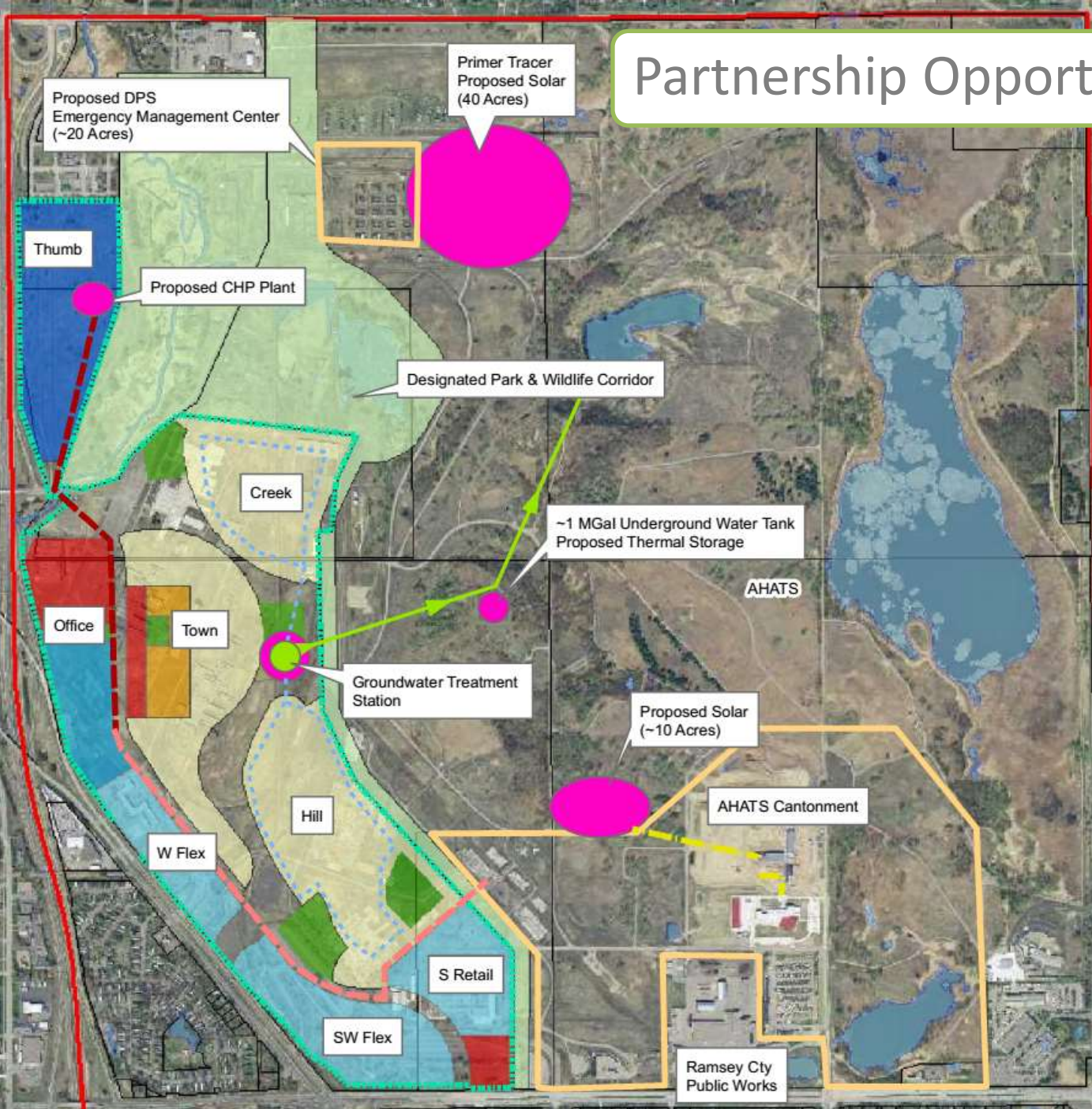


Estimated Energy Loads

	Electrical (MW)	Thermal (MMBTU)	Cooling (tons)
TCAAP	8.0	38.9	617
AHATS	3.4	7.3	500
DPS EOC	0.07	0.5	30
RCPW	0.4	4.1	240
<i>Estimated Total</i>	11.9	50.8	1,387

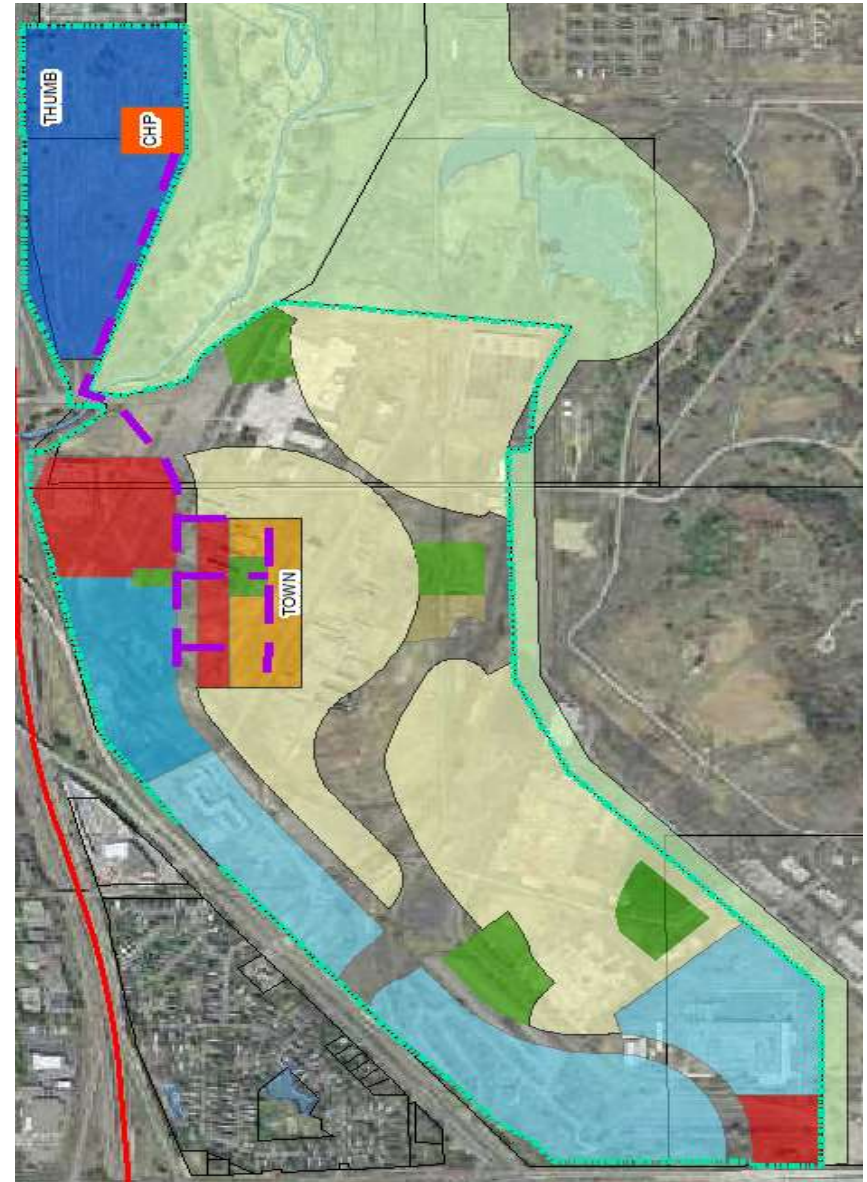


Partnership Opportunities



Combined Heat & Power

- Initial plant could meet the electrical needs of the Thumb
- Expandable to the south as TCAAP is developed
- Integration with AHATS
- Establish a platform for developing a site-wide microgrid



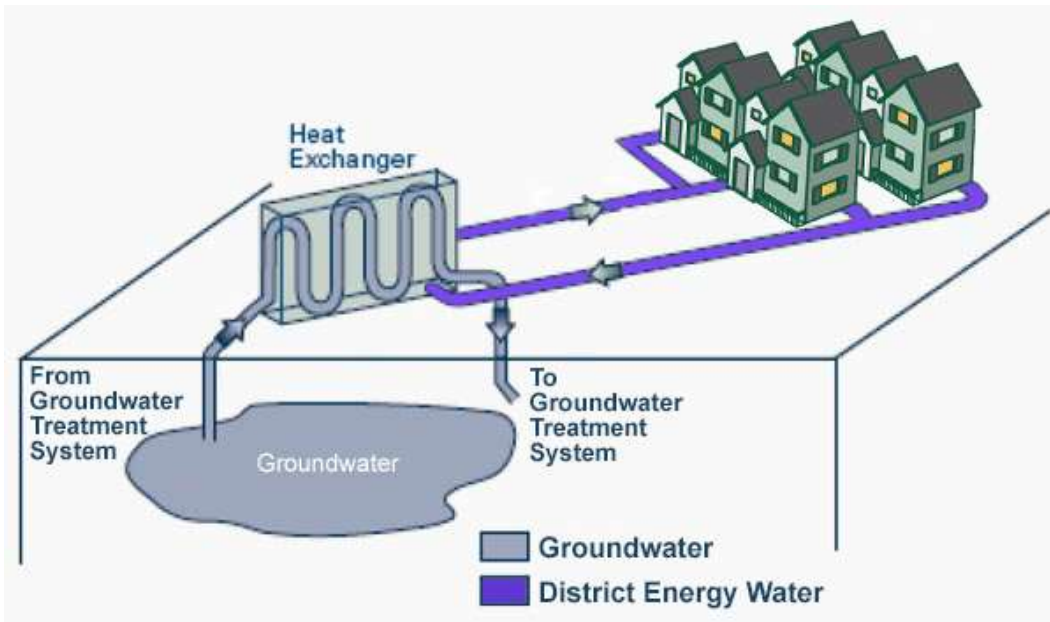
Solar

- Primer Tracer PV
 - ~ 40-60 acres available
 - ~ 8-12 of MW electricity
- Additional PV
 - Areas on AHATS with contaminated soils and limited training usage
 - 1-2 MW of electricity
- Future possible solar thermal integration



Low-Temperature District Energy

- 2 MGD pumping for 25-30 years minimum
- Provide heating and cooling to residential neighborhoods
- Avoid natural gas infrastructure
- Net-zero energy home potential



Environmental Benefits

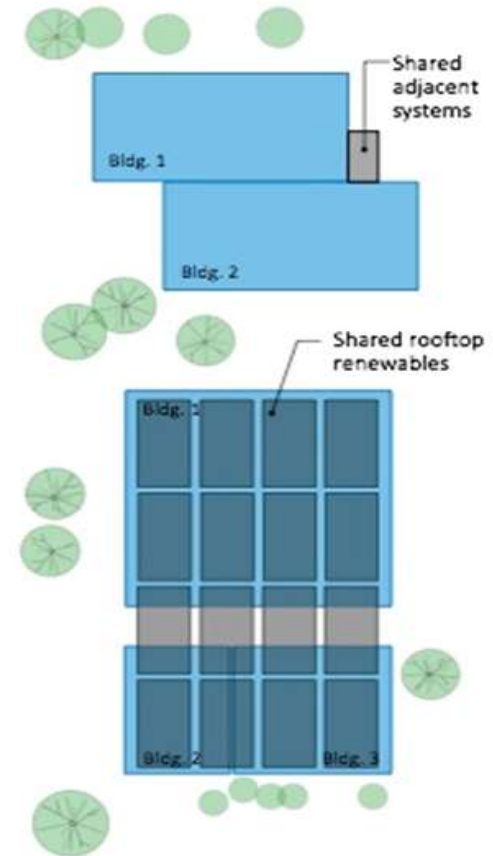
	Traditional Scenario Annual CO₂ Emissions	Recommended Scenarios Annual CO₂ Emissions	Annual CO₂ Reductions	% Reduction
Solar PV	7,524 tons	0 tons	7,524 tons	100%
CHP	3,581 tons	2,905 tons	676 tons	19%
Low Temp District Energy	1,057 tons	747 tons	310 tons	29%
Totals	12,162 tons	3,652 tons	8,510 tons	70%

Equivalent of removing over 1,600 automobiles off the road annually



Demand-Side Management

- High-efficiency commercial buildings (SB-2030)
- Sub-metering
- Strategic building siting and co-location
- Low-load residential development
- Building orientation and passive solar
- High-efficiency streetlights
- Community participation and education
- Demonstration opportunities



Continuing Partnership Discussions

- City of Arden Hills
- Ramsey County
- Saint Paul Chamber of Commerce
- Saint Paul Port Authority
- Arden Hills School District
- Minnesota National Guard
- Xcel Energy (local regulated utility)
- US Army
- University of Minnesota Center for Sustainable Building Research
- Minnesota Department of Homeland Security
- Energy Resilience Advisory Board (citizen group)



Next Steps

- Partnership development
- Solar PV RFP
- CHP discussion with developers and National Guard
- Low-temp district energy business development
- Energy conservation design standards
- Energy-efficient site planning
- Infrastructure planning
- Funding pursuits
- Outreach and education
- Developer education process



Ford Site Redevelopment (St. Paul, MN)



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Ford Site Redevelopment Planning



Aerial Photo 2012



Ever-Green Energy

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Decommissioning Phases

- 2011 – Ford Plant closes
- 2012 – Equipment removal, material abatement and demo prep
- 2013 – Buildings demolished
- 2014 – Slab & foundation removal; environmental testing
- 2015 – Environmental testing; grading and seeding; site “FOR SALE”



Ford Site Redevelopment Planning



Ford Energy Vision

The redeveloped Ford site will balance economic, social and environmental sustainability in a way that conserves and improves the qualities and characteristics of the unique Highland park neighborhood and Mississippi River valley in which it sits while advancing the City's economic wealth and community goals, resulting in a forward- thinking 21st Century development.



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Leveraging Existing Assets



Waste water treatment plant

- Circa 1980, physically sound
- Three water storage tanks

Steam plant

- 1923 historical building
- Environmental remediation required (asbestos, etc.)

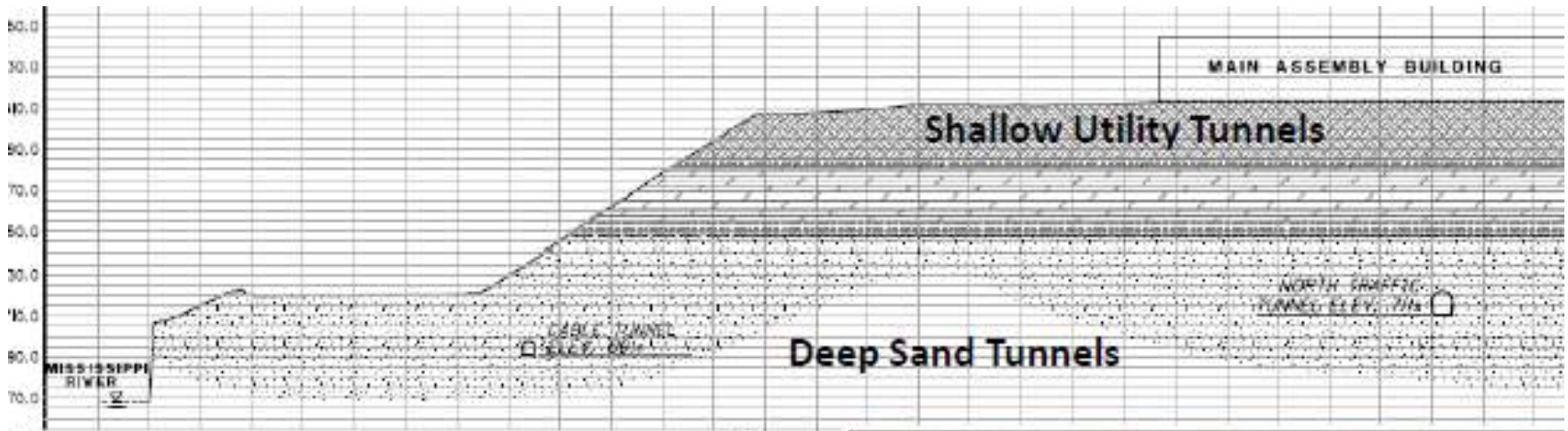
“Area C” capped former dump

- Waste and construction debris
- Reuse uncertain, more testing

18 MW hydro plant



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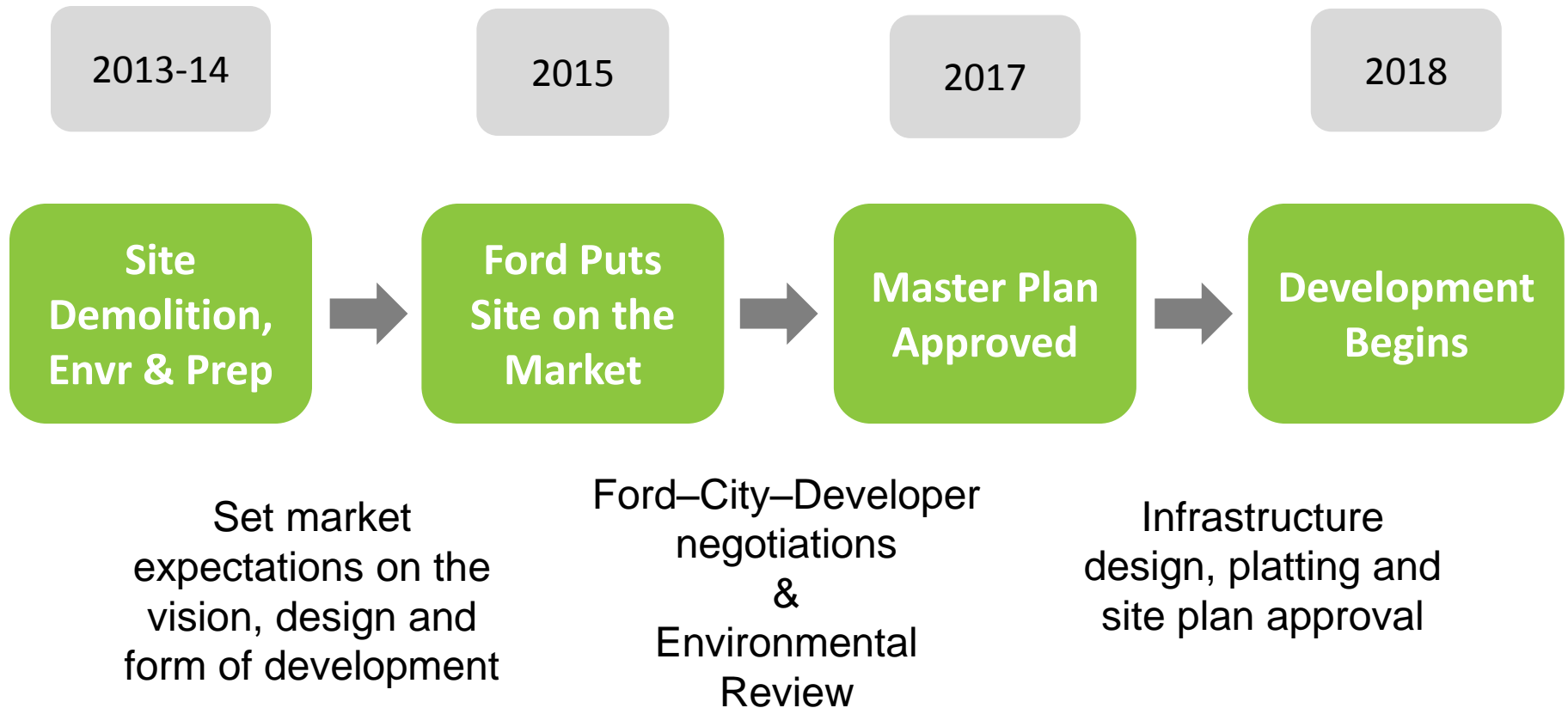


Developing a District Plan

- Rezoning
- Jobs and employment
- Energy planning
- Traffic
- Parking
- Storm water
- Sustainability

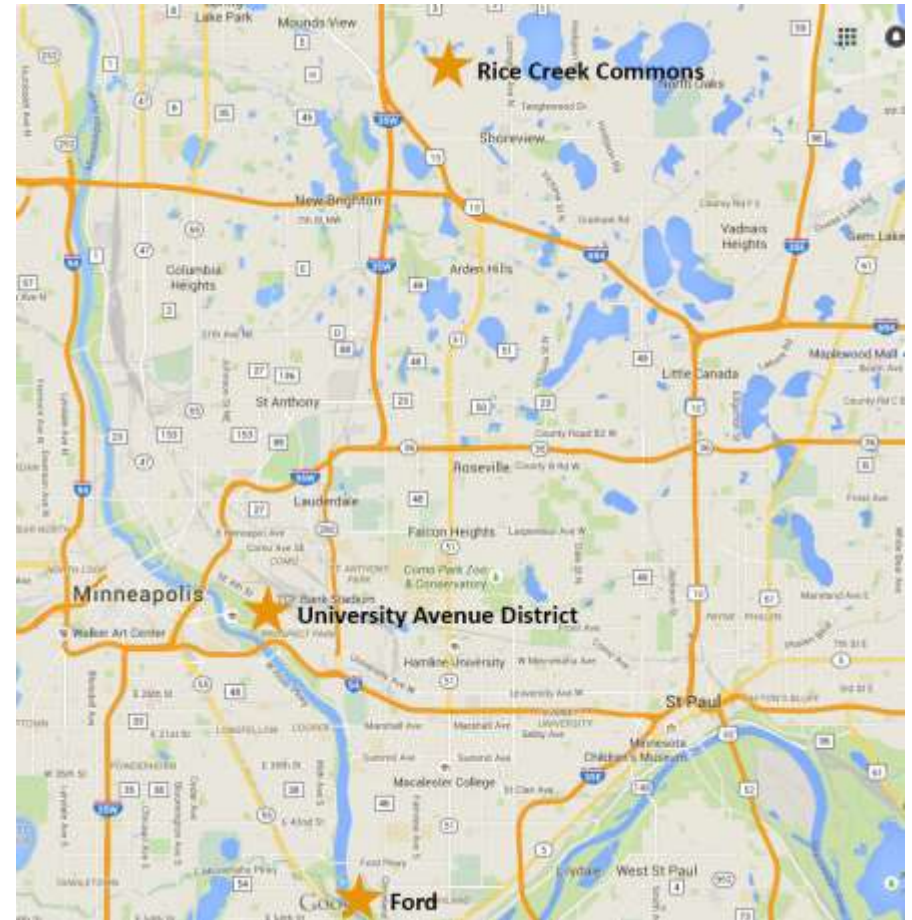


Ford Development Timeline



Twin Cities Green Redevelopment Forum

- Collaboration of Cities, Counties, planners, and developers
- Supported by local foundations
- Led by the National Resources Defense Council
- Collaboration on district planning for three primary brownfield sites in the Twin Cities
- Focus on common energy themes and joint energy pursuits



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Questions?

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