

# Peachtree City WASA Solar REDI Project Analysis

Line Creek WWTP & Rockaway WWTP

January 22, 2018

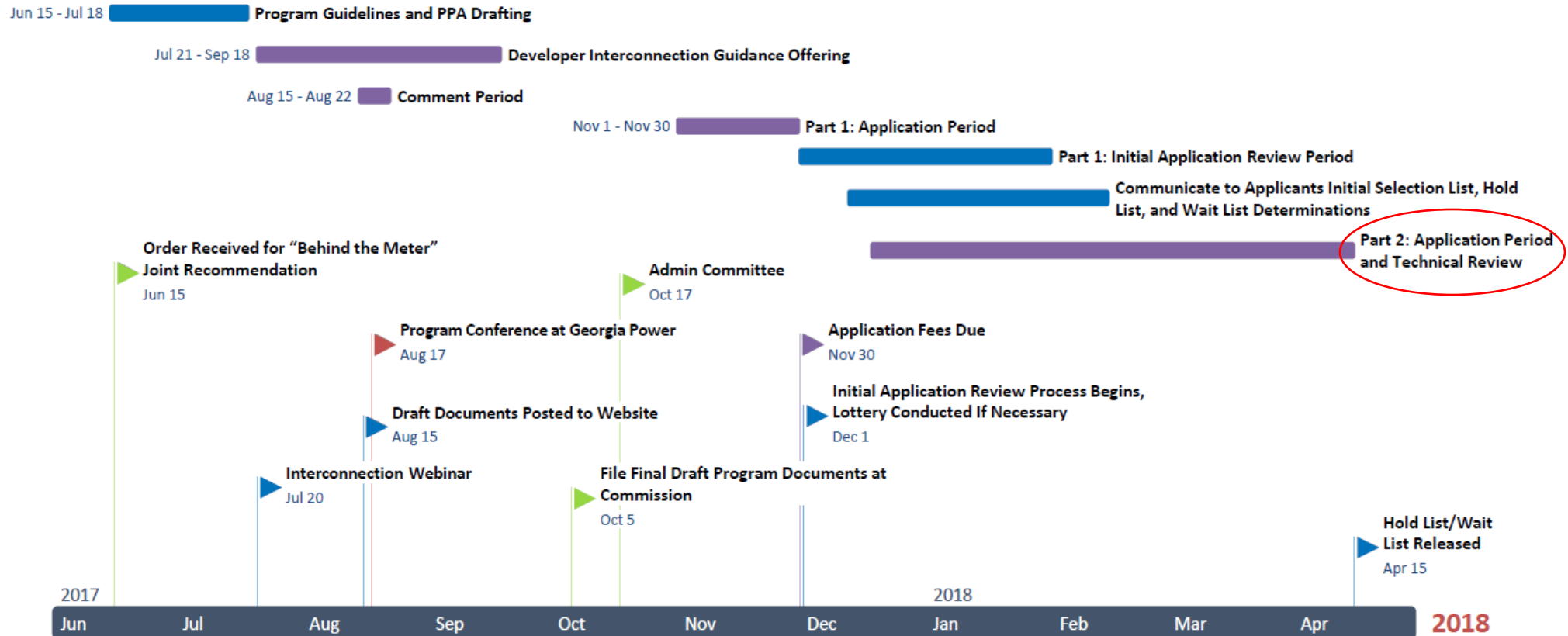
Jason Bodwell, CH2M

All calculations within presentation are estimates



# GA Power - REDI Program Timeline

## Draft REDI CS DG Schedule

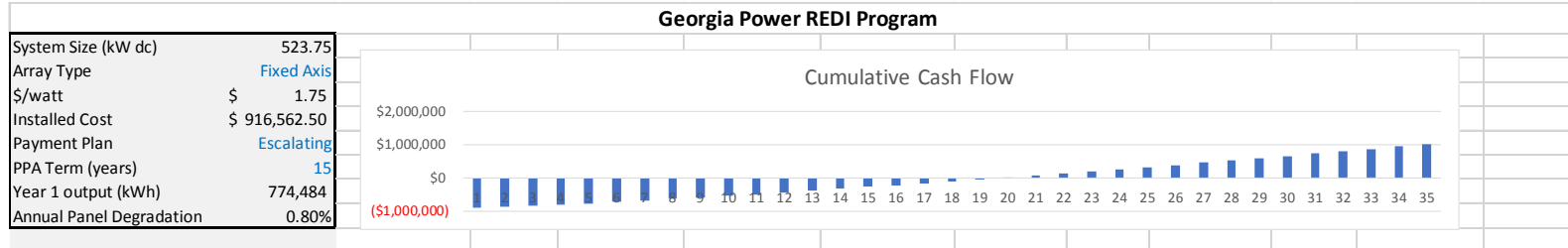


# Line Creek WWTP – Project information



- Project submitted – 11/2/2017
- Project placed on Selection List
- Array Size 523.75 kW<sub>DC</sub>
  - Based on 2016 aggregate demand of two meters
- Fixed-floating array
- \$1.75 per/watt
- ~\$916,562
- Would be the only floating solar project in east
  
- Recommendations:
  - **Fixed array panels**
  - **15 year GA Power PPA**
  - **Escalating payments**

# Line Creek WWTP - Solar Financials



Year	Installed Cost	Application Fee	Interconnection Study Fee	Witness Test	Administrative Fee	Monthly Metering Service Charge	Interconnection Behind the Meter Cost	Solar kWh Production	REDI Rate	Gross Annual Solar Revenue	O/M Expenses	Net Annual Solar Revenue	Cumulative
1	(\$916,563)	(\$1,571)	(\$10,000)	(\$2,500)	(\$1,100)	(\$134)		774,484	\$0.04507	\$34,906	(\$4,000)	(\$900,962)	(\$900,962)
2					(\$1,100)	(\$134)		768,288	\$0.04835	\$37,147	(\$4,000)	\$31,912	(\$869,050)
3					(\$1,100)	(\$134)		762,141	\$0.05255	\$40,051	(\$4,000)	\$34,816	(\$834,233)
4					(\$1,100)	(\$134)		756,044	\$0.05601	\$42,346	(\$4,000)	\$37,112	(\$797,122)
5					(\$1,100)	(\$134)		749,996	\$0.05812	\$43,590	(\$4,000)	\$38,355	(\$758,766)
6					(\$1,100)	(\$134)		743,996	\$0.06276	\$46,693	(\$4,000)	\$41,459	(\$717,307)
7					(\$1,100)	(\$134)		738,044	\$0.06611	\$48,792	(\$4,000)	\$43,558	(\$673,749)
8					(\$1,100)	(\$134)		732,140	\$0.06939	\$50,803	(\$4,000)	\$45,569	(\$628,180)
9					(\$1,100)	(\$134)		726,283	\$0.07169	\$52,067	(\$4,000)	\$46,833	(\$581,348)
10					(\$1,100)	(\$134)		720,472	\$0.07609	\$54,821	(\$4,000)	\$49,586	(\$531,761)
11					(\$1,100)	(\$134)		714,708	\$0.07929	\$56,669	(\$4,000)	\$51,435	(\$480,326)
12					(\$1,100)	(\$134)		708,991	\$0.08384	\$59,442	(\$4,000)	\$54,208	(\$426,119)
13					(\$1,100)	(\$134)		703,319	\$0.08505	\$59,817	(\$4,000)	\$54,583	(\$371,536)
14					(\$1,100)	(\$134)		697,692	\$0.08753	\$61,069	(\$4,000)	\$55,835	(\$315,701)
15					(\$1,100)	(\$134)		692,111	\$0.09090	\$62,913	(\$4,000)	\$57,679	(\$258,022)
16							(\$20,000)	686,574	\$0.09000	\$61,792	(\$4,000)	\$37,792	(\$220,231)
17								681,081	\$0.09180	\$62,523	(\$4,000)	\$58,523	(\$161,707)
18								675,633	\$0.09364	\$63,264	(\$4,000)	\$59,264	(\$102,444)
19								670,228	\$0.09551	\$64,013	(\$4,000)	\$60,013	(\$42,431)
20								664,866	\$0.09742	\$64,770	(\$4,000)	\$60,770	\$18,339
21								659,547	\$0.09937	\$65,537	(\$4,000)	\$61,537	\$79,877
22								654,271	\$0.10135	\$66,313	(\$4,000)	\$62,313	\$142,190
23								649,036	\$0.10338	\$67,098	(\$4,000)	\$63,098	\$205,288
24								643,844	\$0.10545	\$67,893	(\$4,000)	\$63,893	\$269,181
25								638,693	\$0.10756	\$68,697	(\$4,000)	\$64,697	\$333,878
26								633,584	\$0.10971	\$69,510	(\$4,000)	\$65,510	\$399,388
27								628,515	\$0.11190	\$70,333	(\$4,000)	\$66,333	\$465,721
28								623,487	\$0.11414	\$71,166	(\$4,000)	\$67,166	\$532,887
29								618,499	\$0.11642	\$72,009	(\$4,000)	\$68,009	\$600,896
30								613,551	\$0.11875	\$72,861	(\$4,000)	\$68,861	\$669,757
31								608,643	\$0.12113	\$73,724	(\$4,000)	\$69,724	\$739,481
32								603,774	\$0.12355	\$74,597	(\$4,000)	\$70,597	\$810,077
33								598,943	\$0.12602	\$75,480	(\$4,000)	\$71,480	\$881,557
34								594,152	\$0.12854	\$76,374	(\$4,000)	\$72,374	\$953,931
35								589,399	\$0.13111	\$77,278	(\$4,000)	\$73,278	\$1,027,209
TOTAL	(\$916,563)	(\$1,571)	(\$10,000)	(\$2,500)	(\$16,498)	(\$2,016)	(\$20,000)	23,725,027		\$2,136,356	(\$140,000)	\$1,027,209	

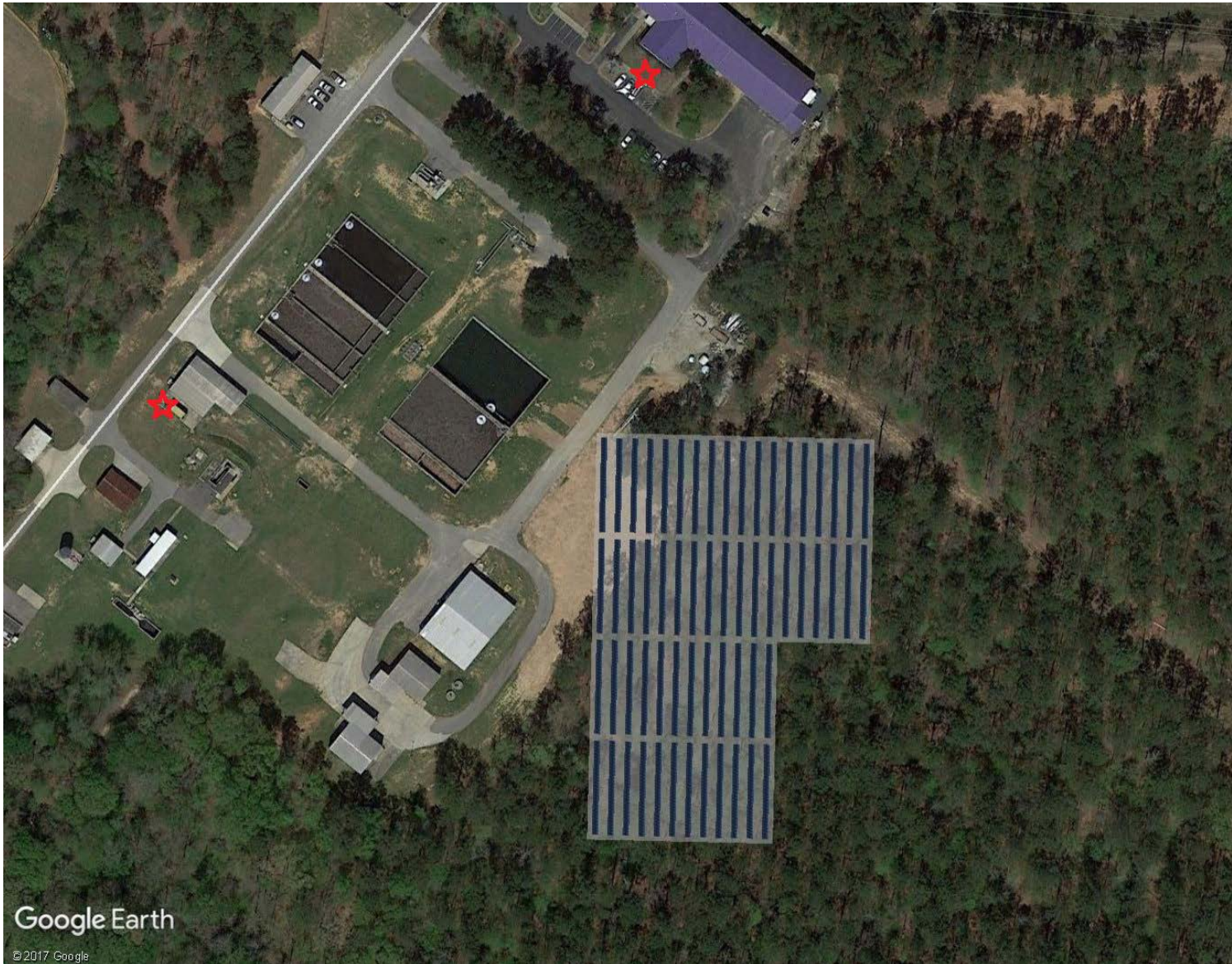
Approximate ROI – 20 years

GA Power REDI Program

Switch to Behind the Meter

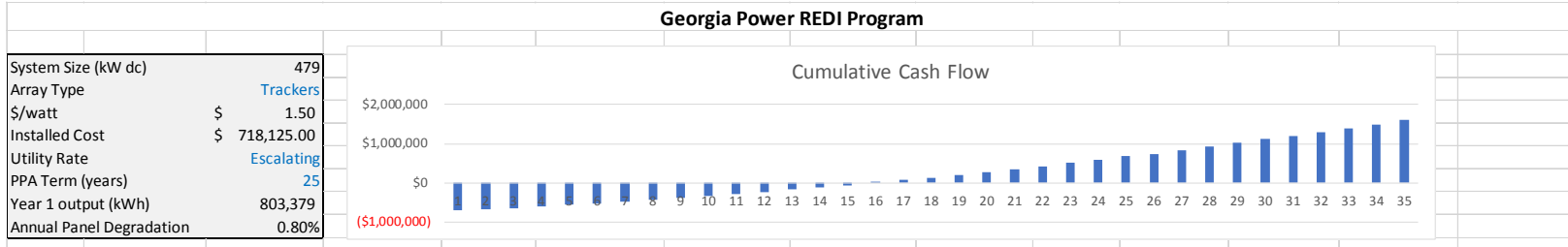
Behind the Meter

# Rockaway WWTP & Office – Project Information



- Project submitted – 11/2/2017
- Project placed on Selection List
- Array size ~479 kW<sub>DC</sub>
  - Based on 2016 aggregated demand of WWTP and Office
- Ground Mounted
- Single-axis Trackers
- \$1.50 per/watt
- \$718,125
- ~2.5 acres
- Array located to not impede future plant expansion
  
- Recommendations:
  - **Single-axis Trackers**
  - **25 year GA Power PPA**
  - **Escalating payments**

# Rockaway WWTP - Solar Financials



Approximate ROI – 16 years

Year	Installed Cost	Application Fee	Interconnection Study Fee	Witness Test	Administrative Fee	Monthly Metering Service Charge	Interconnection Behind the Meter Cost	Solar kWh Production	REDI Rate	Gross Annual Revenue	O/M Expenses	Net Annual Savings	Cumulative
1	(\$718,125)	(\$1,436)	(\$10,000)	(\$2,500)	(\$1,005)	(\$134)		803,379	\$0.04271	\$34,312	(\$3,000)	(\$701,889)	(\$701,889)
2					(\$1,005)	(\$134)		796,952	\$0.04597	\$36,636	(\$3,000)	\$32,496	(\$669,393)
3					(\$1,005)	(\$134)		790,576	\$0.04992	\$39,466	(\$3,000)	\$35,326	(\$634,067)
4					(\$1,005)	(\$134)		784,252	\$0.05313	\$41,667	(\$3,000)	\$37,528	(\$596,539)
5					(\$1,005)	(\$134)		777,978	\$0.05511	\$42,874	(\$3,000)	\$38,735	(\$557,805)
6					(\$1,005)	(\$134)		771,754	\$0.05967	\$46,051	(\$3,000)	\$41,911	(\$515,894)
7					(\$1,005)	(\$134)		765,580	\$0.06278	\$48,063	(\$3,000)	\$43,923	(\$471,971)
8					(\$1,005)	(\$134)		759,455	\$0.06585	\$50,010	(\$3,000)	\$45,870	(\$426,100)
9					(\$1,005)	(\$134)		753,379	\$0.06807	\$51,283	(\$3,000)	\$47,143	(\$378,958)
10					(\$1,005)	(\$134)		747,352	\$0.07214	\$53,914	(\$3,000)	\$49,774	(\$329,183)
11					(\$1,005)	(\$134)		741,374	\$0.07522	\$55,766	(\$3,000)	\$51,626	(\$277,557)
12					(\$1,005)	(\$134)		735,443	\$0.07955	\$58,504	(\$3,000)	\$54,365	(\$223,192)
13					(\$1,005)	(\$134)		729,559	\$0.08053	\$58,751	(\$3,000)	\$54,612	(\$168,581)
14					(\$1,005)	(\$134)		723,723	\$0.08301	\$60,076	(\$3,000)	\$55,936	(\$112,644)
15					(\$1,005)	(\$134)		717,933	\$0.08640	\$62,029	(\$3,000)	\$57,890	(\$54,755)
16					(\$1,005)	(\$134)		712,189	\$0.09135	\$65,058	(\$3,000)	\$60,919	\$6,164
17					(\$1,005)	(\$134)		706,492	\$0.09604	\$67,851	(\$3,000)	\$63,712	\$69,876
18					(\$1,005)	(\$134)		700,840	\$0.10001	\$70,091	(\$3,000)	\$65,951	\$135,827
19					(\$1,005)	(\$134)		695,233	\$0.10614	\$73,792	(\$3,000)	\$69,652	\$205,479
20					(\$1,005)	(\$134)		689,671	\$0.11028	\$76,057	(\$3,000)	\$71,917	\$277,396
21					(\$1,005)	(\$134)		684,154	\$0.11538	\$78,938	(\$3,000)	\$74,798	\$352,194
22					(\$1,005)	(\$134)		678,681	\$0.11955	\$81,136	(\$3,000)	\$76,996	\$429,191
23					(\$1,005)	(\$134)		673,251	\$0.12487	\$84,069	(\$3,000)	\$79,929	\$509,120
24					(\$1,005)	(\$134)		667,865	\$0.13103	\$87,510	(\$3,000)	\$83,371	\$592,491
25					(\$1,005)	(\$134)		662,522	\$0.13415	\$88,877	(\$3,000)	\$84,738	\$677,228
26							(\$20,000)	657,222	\$0.14000	\$92,011	(\$3,000)	\$69,011	\$746,239
27								651,964	\$0.14280	\$93,101	(\$3,000)	\$90,101	\$836,340
28								646,749	\$0.14566	\$94,203	(\$3,000)	\$91,203	\$927,543
29								641,575	\$0.14857	\$95,318	(\$3,000)	\$92,318	\$1,019,861
30								636,442	\$0.15154	\$96,447	(\$3,000)	\$93,447	\$1,113,307
31								631,351	\$0.15457	\$97,589	(\$3,000)	\$94,589	\$1,207,896
32								626,300	\$0.15766	\$98,744	(\$3,000)	\$95,744	\$1,303,640
33								621,289	\$0.16082	\$99,913	(\$3,000)	\$96,913	\$1,400,554
34								616,319	\$0.16403	\$101,096	(\$3,000)	\$98,096	\$1,498,650
35								611,388	\$0.16731	\$102,293	(\$3,000)	\$99,293	\$1,597,943
	(\$718,125)	(\$1,436)	(\$10,000)	(\$2,500)	(\$25,134)	(\$3,360)		24,610,184		\$2,483,499	(\$105,000)	\$1,597,943	

GA Power REDI Program

Switch to Behind the Meter

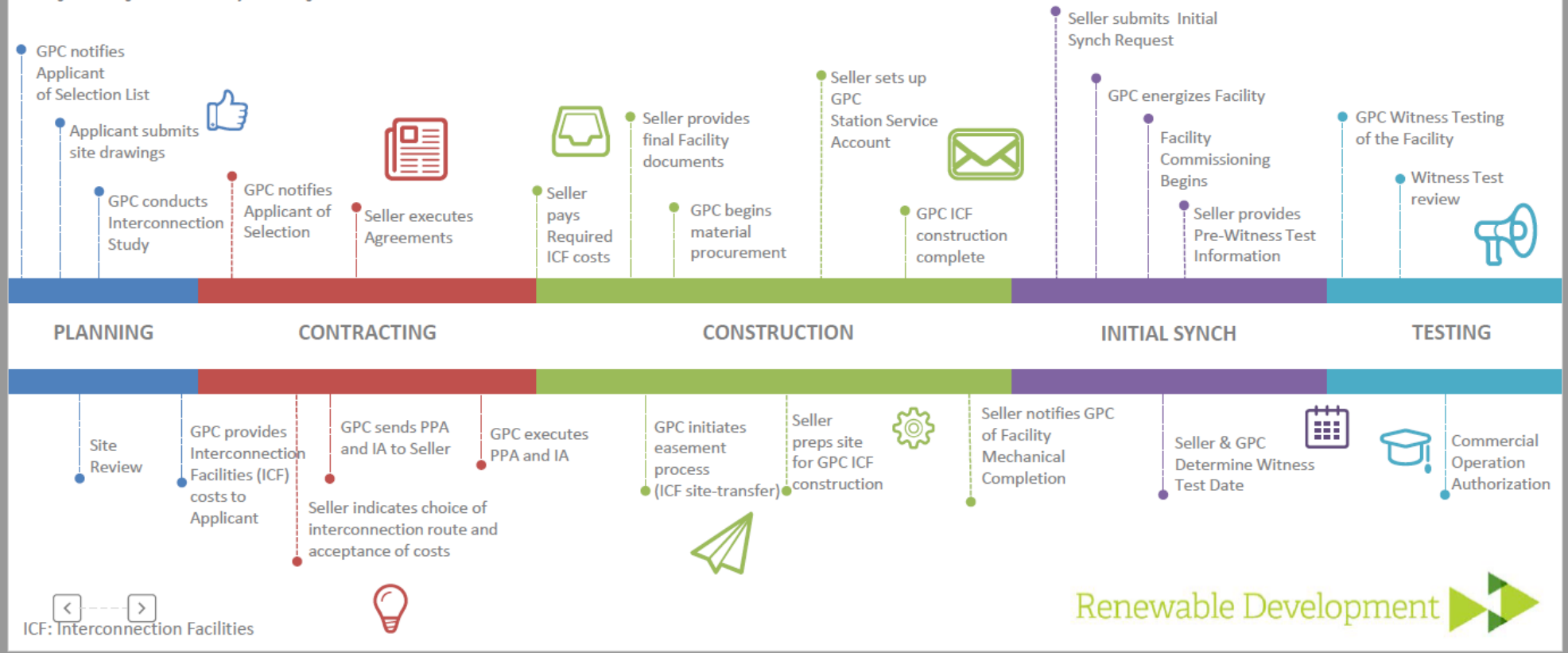
Behind the meter

# GA Power - REDI Program Process

## Distribution Interconnection Process

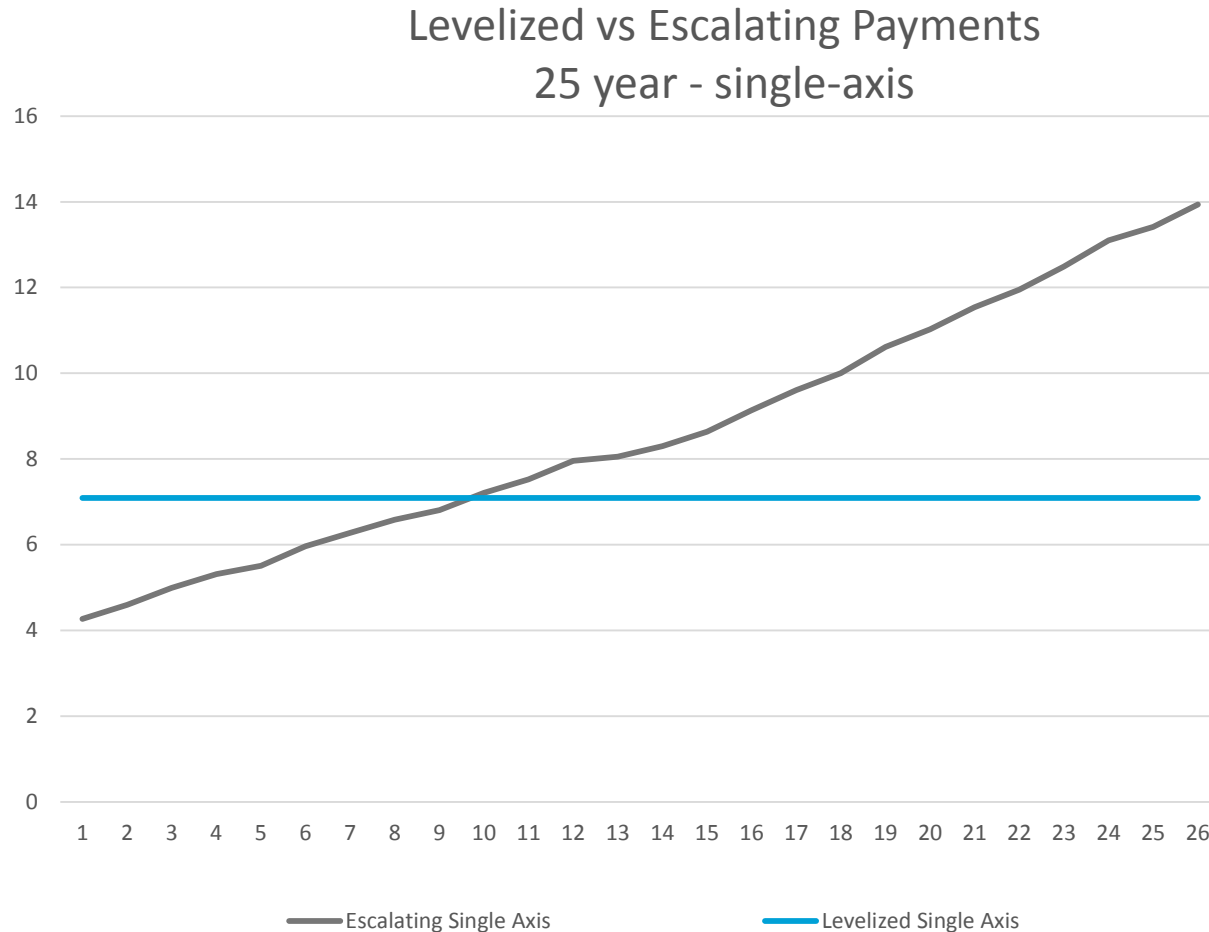
*For illustration purposes only. Georgia Power activities are dependent on Applicant (Seller) obligations, and may not follow the below process if deadlines are not met. Following project award, Georgia Power encourages each Applicant to work closely with its assigned Georgia Power DG Project Manager.*

### Integrating Distributed Generation Solar Resources



# GA Power - REDI Program Options

## Levelized vs Escalating Payments



### Levelized

- Higher payments up front
- Shorter ROI
- Less revenue over term

### Escalating

- Lower payments up front
- Longer ROI
- More revenue over term

### RECOMMENDATION

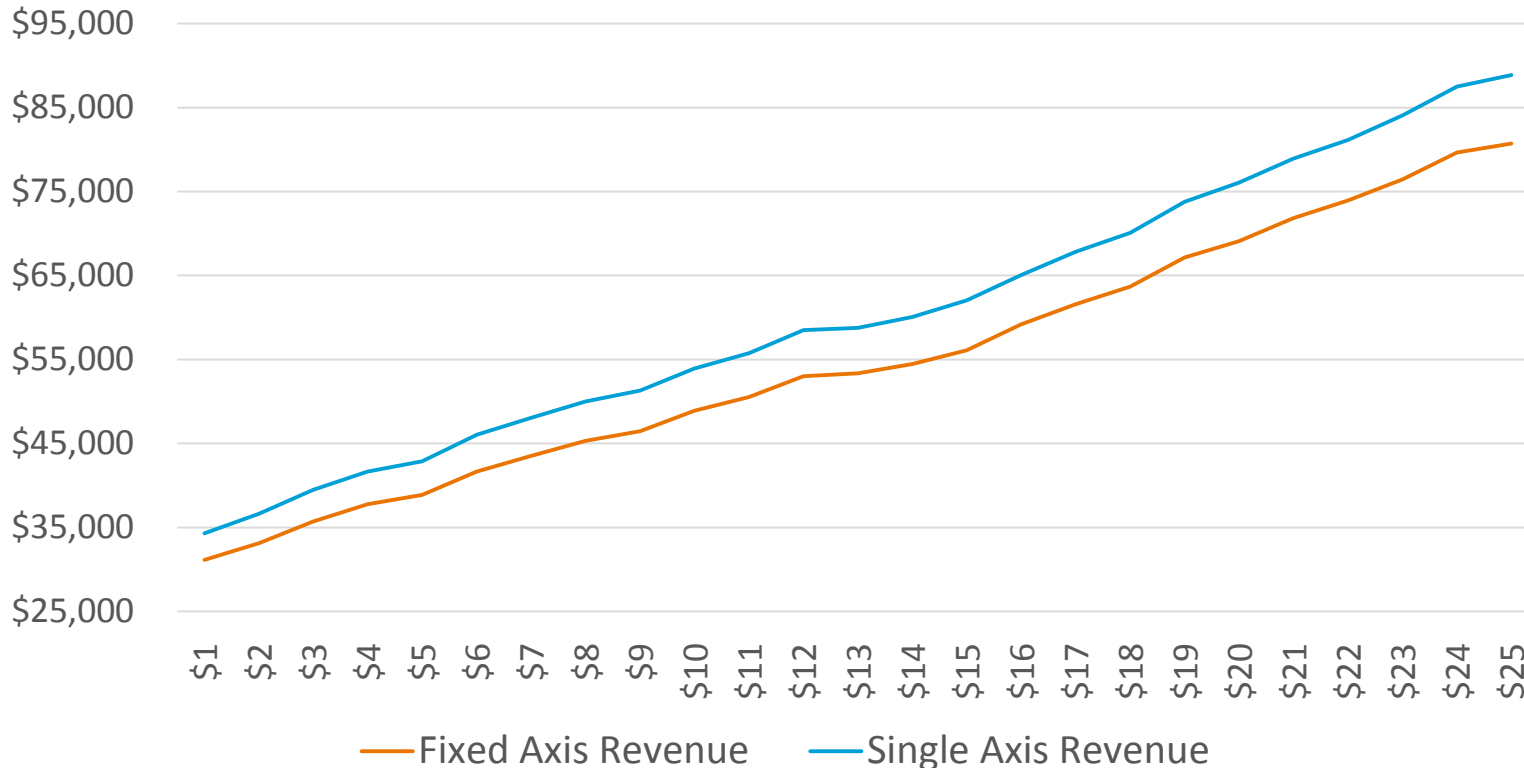
- **Escalating**



# GA Power - REDI Program Options

## Fixed axis vs Single-axis

### Fixed Axis vs Single-axis Payments REDI Payments (based on 25-year agreement)



#### Fixed axis

- Slightly lower construction cost
- Lower annual O/M
- Less revenue
- Longer ROI

#### Single-axis

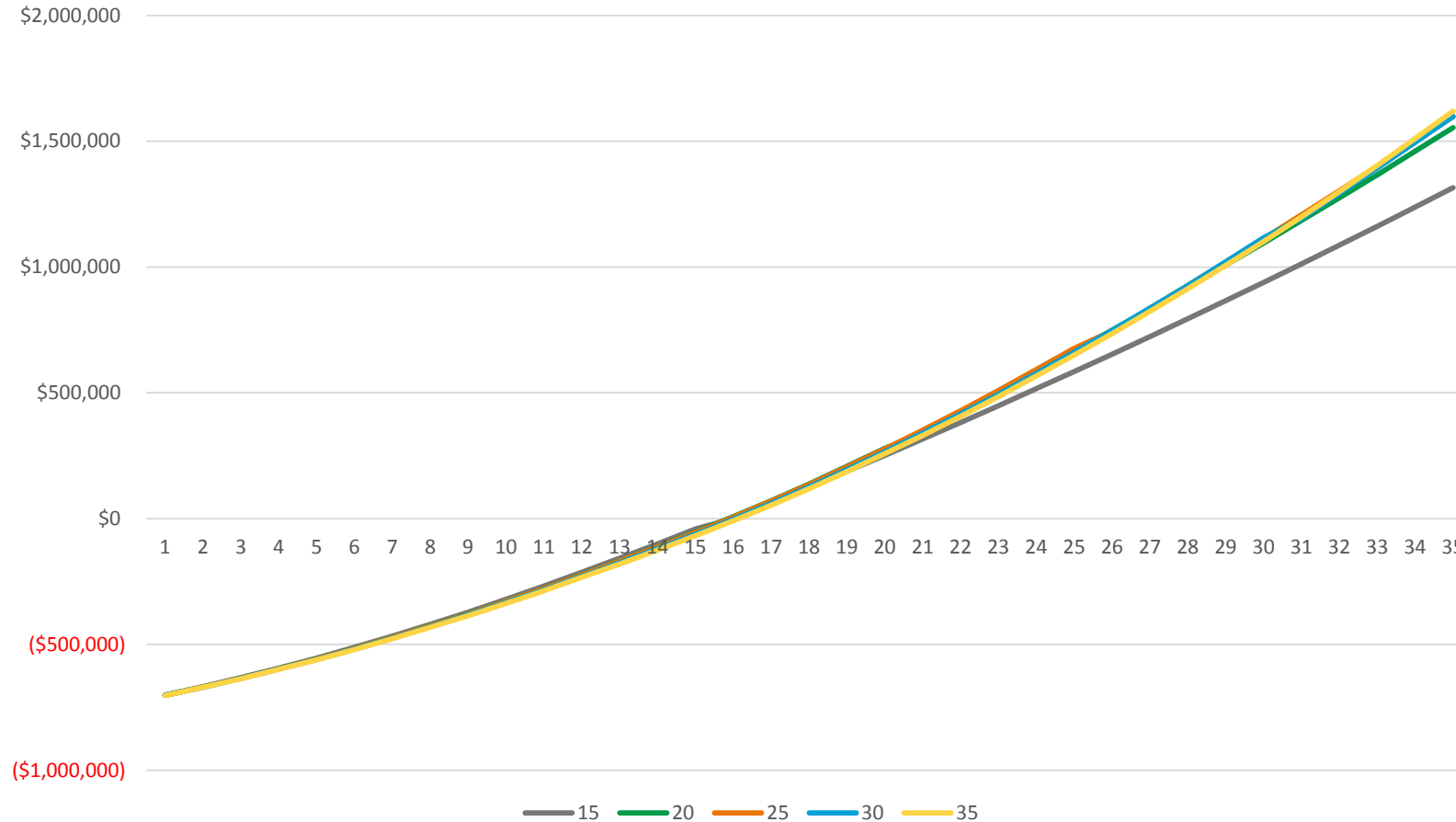
- Slightly higher construction cost
- Higher annual O/M
- **Higher revenue**
- Shorter ROI

#### RECOMMENDATION

- **Single-axis Trackers**

# GA Power - REDI Program Term Options

Escalating Payback Comparision (15, 20, 25, 30, 35 years) with Behind-the-Meter Conversion



## Term Options:

- 15 years
- 20 years
- 25 years
- 30 years
- 35 years

All options are fairly similar

How long of a contract can WASA sign?

## RECOMMENDATION

- **Whatever WASA is comfortable signing**

# Line Creek WWTP – Project Decisions

1. Complete project?
2. Pond liner replacement
  - a. How does it affect the project schedule?
3. Escalating or Levelized payments?
4. Term?
  - a. 15 years
  - b. 20 years
  - c. 25 years
  - d. 30 years
  - e. 35 years

## Next Steps (within 30 days)

1. Pay \$10,000 Interconnection Study Fee
2. Submit application part 2
3. Issue RFP to find solar contractor

# Rockaway WWTP – Project Decisions

1. Complete project?
2. Escalating or Levelized payments?
3. Fixed axis or single-axis trackers?
4. Term?
  - a. 15 years
  - b. 20 years
  - c. 25 years
  - d. 30 years
  - e. 35 years

## Next Steps (within 30 days)

1. Pay \$10,000 Interconnection Study Fee
2. Submit application part 2
3. Issue RFP to find solar contractor