



Office of Sustainability

Presented by

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Sustainability Officer

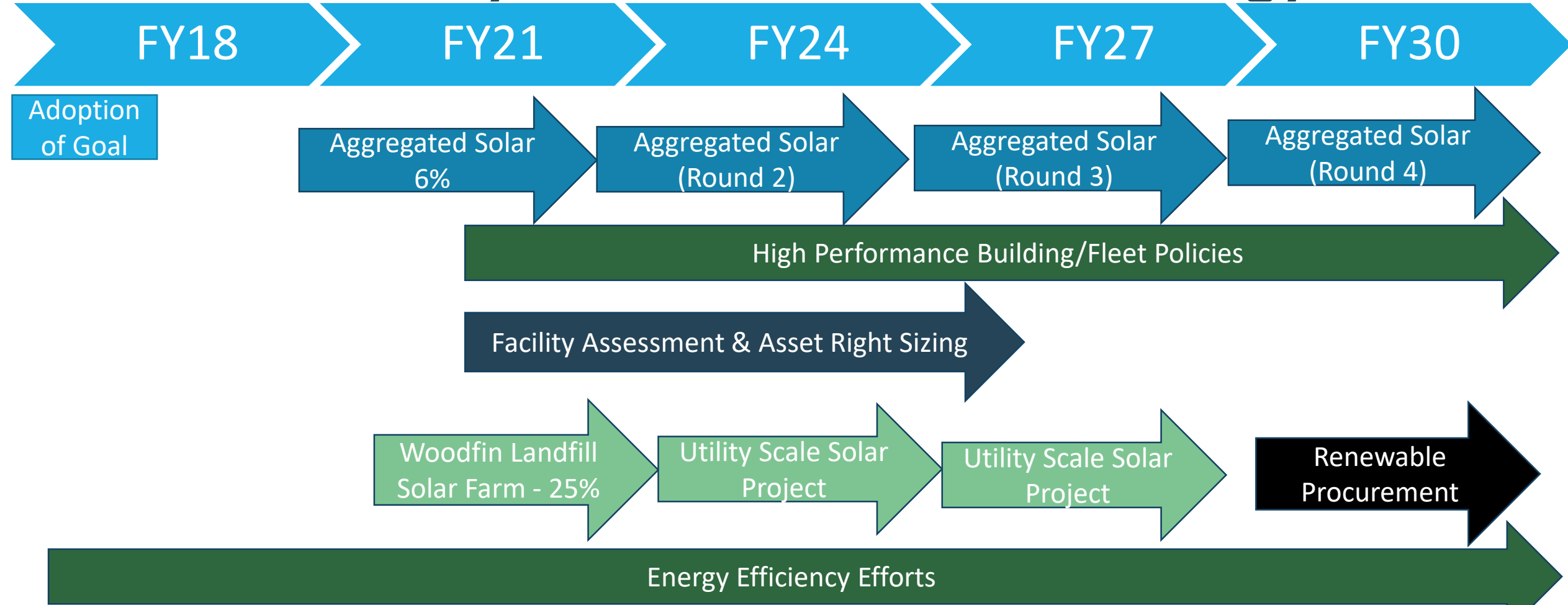


Sustainability and the Strategic Plan 2020-2025

COMMUNITY FOCUS AREAS			
Educated & Capable Community Vision: A county where all residents thrive and demonstrate resilience throughout their lives.	Environmental & Energy Stewardship Vision: High quality air, water, farmland and renewable energy for future generations.	Resident Well-Being Vision: Our residents are safe, healthy, and engaged in their community.	Vibrant Economy Vision: A robust and sustainable regional economy that builds on our homegrown industries and talent and provides economic mobility for residents.



Pathway to 100% Renewable Energy



- Policy and efficiency efforts are intended to reduce overall energy consumption and GHG emissions
- Asset Right Sizing intended to remove inefficient assets in favor of space management and high performance facilities



Solicitation for Solar on Public Facilities

Collaborative effort to bid out solar projects for Public Agencies: **A Total of 47 Projects and ~7MW**

Buncombe County	AB Tech	Buncombe County Schools	Asheville City Schools	City of Asheville
West Asheville Library	Allied Health	Hominy Valley	Hall Fletcher	Burton Street Center
South Buncombe Library	Bailey	Enka Intermediate	Jones Elementary (2)	Shiloh Center
Tax Office	Birch	Glen Arden Elementary	Montford Northstar	Wall Street Deck (3)
HHS Building & Parking Deck	Conference Center	Community High School	Asheville High (3)	Fire Station #10
College St. Deck (2)	Coman/Lock	Cane Creek Middle	Vance Elementary	Fire Station #11
Fairview Library	Ferguson	North Windy Ridge	Asheville Middle	
Leicester Library	Hemlock	BCS Aquatic Center		
North Asheville Library		Erwin High (2)		
Transfer Station		Owen Middle School		
Animal Shelter				
BCAT Training Facility				
Buncombe PSTC (2)				



Solicitation for Solar on Public Facilities

Collaborative effort to bid out solar projects for Public Agencies: A Total of 47 Projects and ~7MW

Public Agency	Estimated Project cost	Project Cost
Buncombe County	\$2,900,000	\$2,440,230

Bid was \$459,770 less than estimated cost



Solicitation for Solar on Public Facilities

Collaborative effort to bid out solar projects for Public Agencies: A Total of 47 Projects and ~7MW

Public Agency	Project Cost
Buncombe County	\$2,440,230
AB Tech	\$1,114,689
Buncombe County Schools	\$4,528,341
Asheville City Schools	\$2,199,876
TOTAL	\$10,283,136



Project Costs

Total Project Costs

- Construction/Installation= ~\$10.3 Million (excluding COA)
- Financing Costs (15 yr) = \$2.2M
- Duke Solar Rebates = -\$2.4M (savings)
- **TOTAL = \$10.1M**

NOTE: Total project costs was ~\$2M below original estimate

Why was the cost lower than anticipated?

- Aggregated procurement was effective in reducing costs
- Solar materials pricing has decreased during COVID -19



Utility Costs and Savings

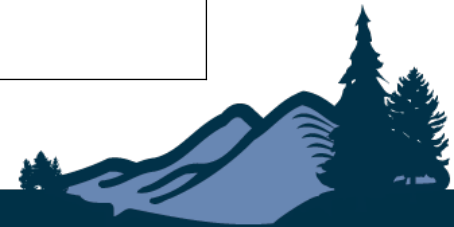
Agency	Annual Electricity Cost	Estimated Savings YEAR 1
Buncombe County	\$1,544,317	\$108,803
Asheville City Schools	\$831,454	\$142,424
AB Tech	\$1,075,344	\$68,693
County Schools	\$3,498,000	\$303,299
Totals	\$6,949,115	\$623,219

\$27.2M – Utility Saving over 30 years



Estimated 30yr Lifetime Savings

	With Rebates	Without Rebates
Utility Savings	\$27.2M	\$27.2M
Total Cost	\$10.1M	\$12.5M
Net Lifetime Savings	\$17.1M	\$14.7M



Payback Analysis

	With Rebates	Without Rebates
Total Cost	\$10.1M	\$12.5M
Simple Payback	11 Years	14 years

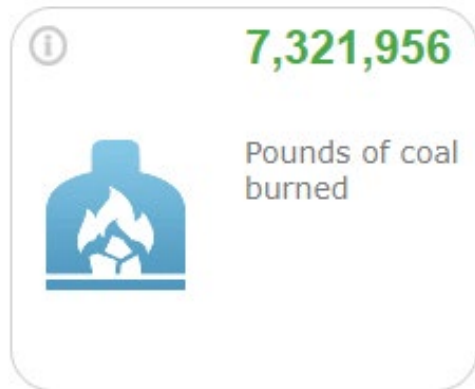


Environmental Impacts

Estimated Annual Production: 9,398,437 kWh (11.6%)

Estimated Annual Carbon Reduction: 6,645 MT

Carbon Equivalents:



Debt Financing

Total Amount to be Financed = \$10.3M

Issuance Cost = \$150,000

	15 year loan		20 year loan	
	LOW	HIGH	LOW	HIGH
Interest Rate	1.5%	2.5%	2.6%	3%
All-in TIC	1.702%	2.712%	2.757%	3.16%



**Debt Service
Schedule**

**All Units,
Excluding City of
Asheville**

	15 Years	
	Low Estimate	High Estimate
Debt Service		
2021	(610,400)	(689,494)
2022	(852,750)	(959,250)
2023	(842,175)	(941,475)
2024	(831,600)	(923,700)
2025	(821,025)	(905,955)
2026	(810,450)	(887,150)
2027	(799,875)	(868,400)
2028	(789,300)	(850,675)
2029	(778,725)	(832,950)
2030	(768,150)	(815,225)
2031	(757,575)	(797,500)
2032	(742,000)	(778,775)
2033	(731,500)	(761,075)
2034	(721,000)	(743,375)
2035	(710,500)	(724,675)
	<u>(11,567,025)</u>	<u>(12,479,674)</u>

15 Year Financing Cash Flow Analysis

Debt Service, Duke Rebate & Electric Savings Buncombe County Only

		<u>15 Years</u>		County	Total Cash	Cumulative
		High Estimate	Duke Rebate	Electric Bill	Flow	Cash Flow
				Savings		
Debt Service						
2021	(164,018)	574,515	108,803	519,300	519,300	
2022	(227,900)		111,506	(116,394)	402,906	
2023	(223,675)		114,274	(109,401)	293,505	
2024	(219,450)		117,108	(102,342)	191,163	
2025	(215,255)		120,009	(95,246)	95,917	
2026	(210,000)		122,979	(87,021)	8,896	
2027	(205,800)		126,018	(79,782)	(70,886)	
2028	(201,600)		129,130	(72,470)	(143,356)	
2029	(197,400)		132,315	(65,085)	(208,441)	
2030	(193,200)		135,574	(57,626)	(266,067)	
2031	(189,000)		138,910	(50,090)	(316,157)	
2032	(184,800)		142,325	(42,475)	(358,632)	
2033	(180,600)		145,819	(34,781)	(393,413)	
2034	(176,400)		149,395	(27,005)	(420,418)	
2035	(172,200)		153,054	(19,146)	(439,564)	
	<u>(2,961,298)</u>	<u>574,515</u>	<u>1,947,219</u>	<u>(439,564)</u>	<u>(439,564)</u>	

15 Years

**15 Year Financing
Cash Flow
Analysis**

**Debt Service &
Duke Rebate
All Units,
Excluding City of
Asheville**

**Electric Savings
Buncombe County
Only**

		High Estimate	Duke Rebate	County Electric Bill Savings	Total Cash Flow	Cumulative Cash Flow
Debt Service						
2021		(689,494)	1,211,734	108,803	631,043	631,043
2022		(959,250)	1,211,734	111,506	363,990	995,033
2023		(941,475)		114,274	(827,201)	167,832
2024		(923,700)		117,108	(806,592)	(638,760)
2025		(905,955)		120,009	(785,946)	(1,424,706)
2026		(887,150)		122,979	(764,171)	(2,188,877)
2027		(868,400)		126,018	(742,382)	(2,931,259)
2028		(850,675)		129,130	(721,545)	(3,652,804)
2029		(832,950)		132,315	(700,635)	(4,353,439)
2030		(815,225)		135,574	(679,651)	(5,033,090)
2031		(797,500)		138,910	(658,590)	(5,691,680)
2032		(778,775)		142,325	(636,450)	(6,328,130)
2033		(761,075)		145,819	(615,256)	(6,943,386)
2034		(743,375)		149,395	(593,980)	(7,537,366)
2035		(724,675)		153,054	(571,621)	(8,108,987)
		(12,479,674)	2,423,468	1,947,219	(8,108,987)	(8,108,987)

15 Year Financing Cash Flow Analysis

**Debt Service,
Duke Rebate &
Electric Savings
All Units,
Excluding City of
Asheville**

	15 Years		Electric Bill Savings	Total Cash Flow	Cumulative Cash Flow
	High Estimate	Duke Rebate			
Debt Service					
2021	(689,494)	1,211,734	623,220	1,145,460	1,145,460
2022	(959,250)	1,211,734	638,707	891,191	891,191
2023	(941,475)		654,562	(286,913)	(286,913)
2024	(923,700)		670,794	(252,906)	(252,906)
2025	(905,955)		687,411	(218,544)	(218,544)
2026	(887,150)		704,420	(182,730)	(182,730)
2027	(868,400)		721,832	(146,568)	(146,568)
2028	(850,675)		739,655	(111,020)	(111,020)
2029	(832,950)		757,897	(75,053)	(75,053)
2030	(815,225)		776,568	(38,657)	(38,657)
2031	(797,500)		795,677	(1,823)	(1,823)
2032	(778,775)		815,234	36,459	36,459
2033	(761,075)		835,249	74,174	74,174
2034	(743,375)		855,730	112,355	112,355
2035	(724,675)		876,688	152,013	152,013
	(12,479,674)	2,423,468	11,153,644	1,097,438	152,013



Decision Points

- **Which projects should be funded?**
 1. Buncombe County
 2. Buncombe County + Education partners
- **Where will debt service payments come from?**
 1. School Capital Commission funds
 2. Buncombe County funds
 3. Buncombe County funds + Savings/Revenue from Education partners
 - Reduce utility costs in Education partners' annual budget requests
 - Remit rebate revenue to the County
 - An MOU would be needed with each Ed. partner



Timeline

Round 1 timeline

July 21st, 2020– BOC meeting, contract presentation

August 2020

- MOUs with Partner Agencies
- Notice to Proceed/Contract Award

September 2020

- 1-4 Sites constructed simultaneously
- 18-24 months for completion

Spring/Summer 2022 - Commercial operation for all systems



Future Opportunities

During the process of pulling together FY21 projects, other public entities expressed interest in participating in this process.

If the board is interested in pursuing a similar project next year with other public partners, such as the Airport, UNC-Asheville, etc? If so, below is a possible timeline:

Aggregated Solar Round 2 proposed timeline

August – Sept 2020 - Meetings with public agencies

Sept 2020 – Site visits

Oct 2020 - CIP project submission deadline

June 2021 – BOC reviews projects as part of the annual budget process



Questions?



Appendix



**Debt Service
Schedule**

**All Units,
Excluding City of
Asheville**

	20 Years	
	Low Estimate	High Estimate
Debt Service		
2021	(481,360)	(599,592)
2022	(676,560)	(833,710)
2023	(675,770)	(817,750)
2024	(679,720)	(800,790)
2025	(678,280)	(784,860)
2026	(676,580)	(767,930)
2027	(679,620)	(752,030)
2028	(677,270)	(736,130)
2029	(679,660)	(719,230)
2030	(676,660)	(703,360)
2031	(678,400)	(687,490)
2032	(679,750)	(671,620)
2033	(675,710)	(655,750)
2034	(676,410)	(638,880)
2035	(676,720)	(623,040)
2036	(676,640)	(607,200)
2037	(676,170)	(591,360)
2038	(680,310)	(575,520)
2039	(678,930)	(559,680)
2040	(677,160)	(543,840)
	<u>(13,357,680)</u>	<u>(13,669,762)</u>

20 Year Financing Cash Flow Analysis

Debt Service & Duke Rebate All Units, Excluding City of Asheville

Electric Savings Buncombe County Only

	20 Years		County Electric Bill Savings	Total Cash Flow	Cumulative Cash Flow
	High Estimate	Duke Rebate			
Debt Service					
2021	(599,592)	1,211,734	108,803	720,945	720,945
2022	(833,710)	1,211,734	111,506	489,530	489,530
2023	(817,750)		114,274	(703,476)	(703,476)
2024	(800,790)		117,108	(683,682)	(683,682)
2025	(784,860)		120,009	(664,851)	(664,851)
2026	(767,930)		122,979	(644,951)	(644,951)
2027	(752,030)		126,018	(626,012)	(626,012)
2028	(736,130)		129,130	(607,000)	(607,000)
2029	(719,230)		132,315	(586,915)	(586,915)
2030	(703,360)		135,574	(567,786)	(567,786)
2031	(687,490)		138,910	(548,580)	(548,580)
2032	(671,620)		142,325	(529,295)	(529,295)
2033	(655,750)		145,819	(509,931)	(509,931)
2034	(638,880)		149,395	(489,485)	(489,485)
2035	(623,040)		153,054	(469,986)	(469,986)
2036	(607,200)		156,798	(450,402)	(450,402)
2037	(591,360)		160,628	(430,732)	(430,732)
2038	(575,520)		164,548	(410,972)	(410,972)
2039	(559,680)		172,661	(387,019)	(387,019)
2040	(543,840)		176,859	(366,981)	(366,981)
	<u>(13,669,762)</u>	<u>2,423,468</u>	<u>2,778,713</u>	<u>(8,467,581)</u>	<u>(469,986)</u>



20 Year Financing Cash Flow Analysis

Debt Service,
Duke Rebate &
Electric Savings
All Units,
Excluding City of
Asheville

		20 Years		County	Total Cash	Cumulative
		High Estimate	Duke Rebate	Electric Bill	Flow	Cash Flow
Debt Service				Savings		
2021	(599,592)	1,211,734	623,220	1,235,362	1,235,362	
2022	(833,710)	1,211,734	638,707	1,016,731	1,016,731	
2023	(817,750)		654,562	(163,188)	(163,188)	
2024	(800,790)		670,794	(129,996)	(129,996)	
2025	(784,860)		687,411	(97,449)	(97,449)	
2026	(767,930)		704,420	(63,510)	(63,510)	
2027	(752,030)		721,832	(30,198)	(30,198)	
2028	(736,130)		739,655	3,525	3,525	
2029	(719,230)		757,897	38,667	38,667	
2030	(703,360)		776,568	73,208	73,208	
2031	(687,490)		795,677	108,187	108,187	
2032	(671,620)		815,234	143,614	143,614	
2033	(655,750)		835,249	179,499	179,499	
2034	(638,880)		855,730	216,850	216,850	
2035	(623,040)		876,688	253,648	253,648	
2036	(607,200)		898,134	290,934	290,934	
2037	(591,360)		920,078	328,718	328,718	
2038	(575,520)		942,530	367,010	367,010	
2039	(559,680)		965,501	405,821	405,821	
2040	(543,840)		989,002	445,162	445,162	
	(13,669,762)	2,423,468	15,868,889	4,622,595	253,648	



**Debt Service by
Individual Unit**

**15 Year
High Estimate
First Principal
Payment Due
06/2021**

	15 Years				
	<u>County</u>	<u>ACS</u>	<u>BCS</u>	<u>AB Tech</u>	<u>Total</u>
Project Total	2,440,230	2,199,876	4,528,341	1,114,689	10,283,136
Debt Service					
2021	(164,018)	(147,680)	(303,689)	(74,107)	(689,494)
2022	(227,900)	(205,100)	(422,325)	(103,925)	(959,250)
2023	(223,675)	(201,300)	(414,500)	(102,000)	(941,475)
2024	(219,450)	(197,500)	(406,675)	(100,075)	(923,700)
2025	(215,255)	(193,700)	(398,850)	(98,150)	(905,955)
2026	(210,000)	(189,900)	(391,025)	(96,225)	(887,150)
2027	(205,800)	(186,100)	(382,200)	(94,300)	(868,400)
2028	(201,600)	(182,300)	(374,400)	(92,375)	(850,675)
2029	(197,400)	(178,500)	(366,600)	(90,450)	(832,950)
2030	(193,200)	(174,700)	(358,800)	(88,525)	(815,225)
2031	(189,000)	(170,900)	(351,000)	(86,600)	(797,500)
2032	(184,800)	(166,100)	(343,200)	(84,675)	(778,775)
2033	(180,600)	(162,325)	(335,400)	(82,750)	(761,075)
2034	(176,400)	(158,550)	(327,600)	(80,825)	(743,375)
2035	(172,200)	(154,775)	(319,800)	(77,900)	(724,675)
	<u>(2,961,298)</u>	<u>(2,669,430)</u>	<u>(5,496,064)</u>	<u>(1,352,882)</u>	<u>(12,479,674)</u>

Debt Service by Individual Unit

20 Year High Estimate First Principal Payment Due 06/2021

	20 Years				
	County	ACS	BCS	AB Tech	Total
Project Total	2,440,230	2,199,876	4,528,341	1,114,689	10,283,136
Debt Service					
2021	(141,821)	(128,616)	(264,027)	(65,128)	(599,592)
2022	(197,610)	(178,530)	(366,870)	(90,700)	(833,710)
2023	(193,830)	(175,110)	(359,850)	(88,960)	(817,750)
2024	(190,050)	(171,690)	(351,830)	(87,220)	(800,790)
2025	(186,270)	(168,270)	(344,840)	(85,480)	(784,860)
2026	(182,490)	(163,850)	(337,850)	(83,740)	(767,930)
2027	(178,710)	(160,460)	(330,860)	(82,000)	(752,030)
2028	(174,930)	(157,070)	(323,870)	(80,260)	(736,130)
2029	(171,150)	(153,680)	(316,880)	(77,520)	(719,230)
2030	(167,370)	(150,290)	(309,890)	(75,810)	(703,360)
2031	(163,590)	(146,900)	(302,900)	(74,100)	(687,490)
2032	(159,810)	(143,510)	(295,910)	(72,390)	(671,620)
2033	(156,030)	(140,120)	(288,920)	(70,680)	(655,750)
2034	(151,250)	(136,730)	(281,930)	(68,970)	(638,880)
2035	(147,500)	(133,340)	(274,940)	(67,260)	(623,040)
2036	(143,750)	(129,950)	(267,950)	(65,550)	(607,200)
2037	(140,000)	(126,560)	(260,960)	(63,840)	(591,360)
2038	(136,250)	(123,170)	(253,970)	(62,130)	(575,520)
2039	(132,500)	(119,780)	(246,980)	(60,420)	(559,680)
2040	(128,750)	(116,390)	(239,990)	(58,710)	(543,840)
	<u>(3,243,661)</u>	<u>(2,924,016)</u>	<u>(6,021,217)</u>	<u>(1,480,868)</u>	<u>(13,669,762)</u>