Los Angeles County
Metropolitan Transportation Authority

Metro Ad-Hoc Sustainability Committee:

Year One Report on MSSC Renewable Energy/Efficiency Public/Private Partnership

April 20, 2011

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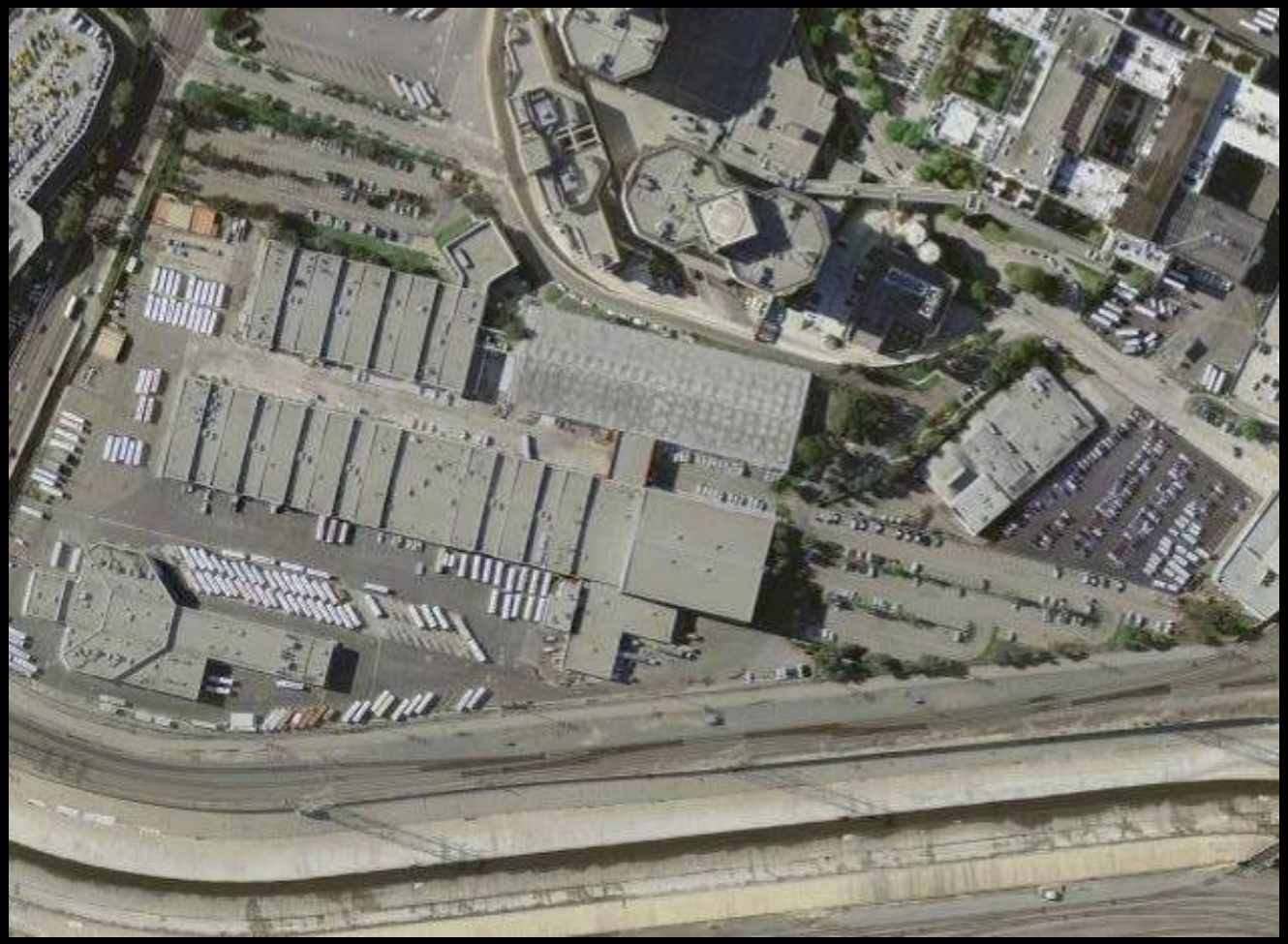
The Site (Metro Support Services Center)



- 20 acres
- Adjacent to HQ
- 26-year old heavy maintenance facility with $1,100,000/year energy bills
- Space for 1 megawatt of solar panels
- Seemingly limitless opportunities for energy efficiency upgrades

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The Site (Metro Support Services Center)

- Central Maintenance
- Rebuild
- Machining
- Central Stores
- Paint Shop
- Administration
- Non-Revenue
- Facilities Maintenance

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Public/Private Partnership

Partners

Metro

Chevron

Client

Metro

Builder/Operator

Financing

MSSC Solar and Energy Efficiency Project

- Project was to "green" the entire facility by retrofitting HVAC, air compressing systems, lighting equipment, and installing 1 megawatt of solar panels on the roofs
- Total of $6.5 million in incentives from Gas Co, LADWP, and AQMD
- Project was constructed using a "Performance Contracting" approach (design/build/finance/guarantee).
- Largest solar installation by a transit property to date, largest in City of Los Angeles.

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MSSC Solar and Energy Efficiency Project

- Public/Private partnership between financing entity (BofA), installer (Chevron) and owner (Metro)
- Contractor responsible for all facets including financing, design, permits, construction, and energy guarantees
- Metro pays the finance costs on an amortized basis, but deducts the savings generated
- Metro owns the system and maintains per Contractor program, Contractor guarantees savings over ten years
- RFP issued for bidders May 2007, deal negotiated September 2007, Board approved project January 2008.
- Construction started May 2008 and was completed in May 2009.

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MSSC Solar and Energy Efficiency Project

Scope of Work

- Installation of 1.2 Megawatts of Photovoltaic Solar Panels (roughly 6720 individual panels) and inverters
- Replacement of 4,000 light fixtures
- Replacement of 3 Packaged HVAC Units
- Replacement of Shop Air Compressors and Repair of Air Leaks
- Installation of Energy Management System

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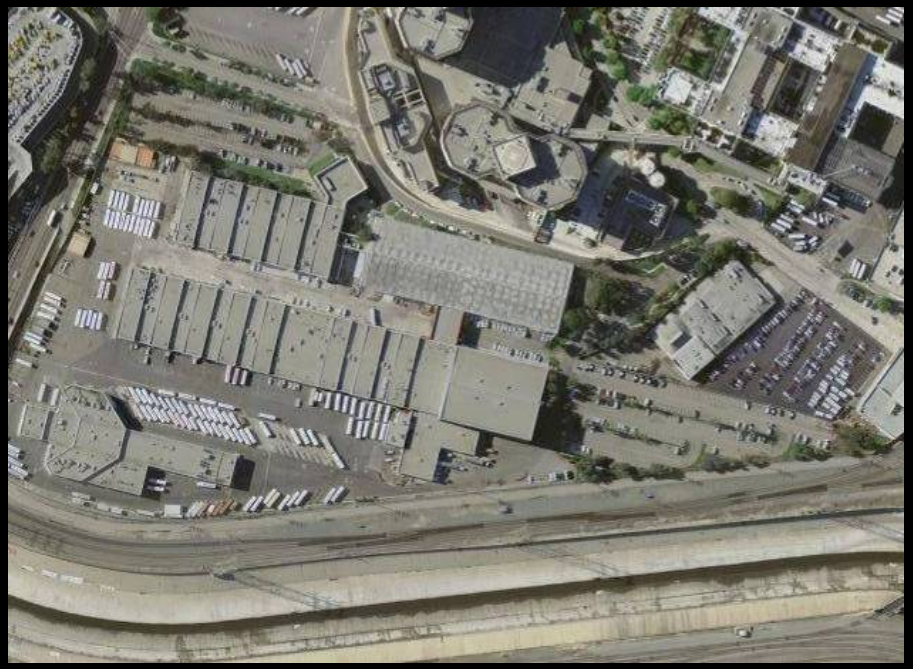
Solar Panels

Before



After

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Solar Panels

HVAC Retrofits

HVAC Replacement (3 Units 75T, 20T, 20T)

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Lighting Upgrades

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Replaced 4000 Lighting Fixtures

New Compressed Air System

New Air Tanks

New Air Compressors

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MSSC Solar and Energy Efficiency Project

Project ProForma (prior to construction)

- Project Cost: $16.4 million
- Rebate at end of construction: ($6.5 million)
- Financed Cost: $10.4 million at 4% (10 years)
- 10 Year Monthly Cost: $115,000
- Savings per month: $50,000
- For ten years, project will cost us $65,000 per month
- At end of 10 years, Metro enjoys all electricity savings
- Project would produce a net present value return on investment of 18 years

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MSSC Solar and Energy Efficiency Project

First Year Results of Project

- Monitoring and measuring of actual savings has now been completed by Chevron for the period of September 2009 to October 2010
- Savings have been greater than expected, with closer to a 58% savings off our electrical bill, or $54,000/month. Chevron has exceeded their guarantees.
- Yearly utility costs for electricity have been reduced from $1.1 million to $454,000
- The project saved a total of 7,380,262 kWh this year, equivalent to powering 578 homes. In terms of greenhouse gases, we saved 12,632,951 lbs. of CO2, equivalent to removing 1,095 passenger cars from the road.
- On a net present value basis, project is cash positive at closer to 17 years and realizes a $2 million ROI over life of equipment
- Over the Life of Equipment, the project reduces our CO2 Emissions by 60,000 metric tons

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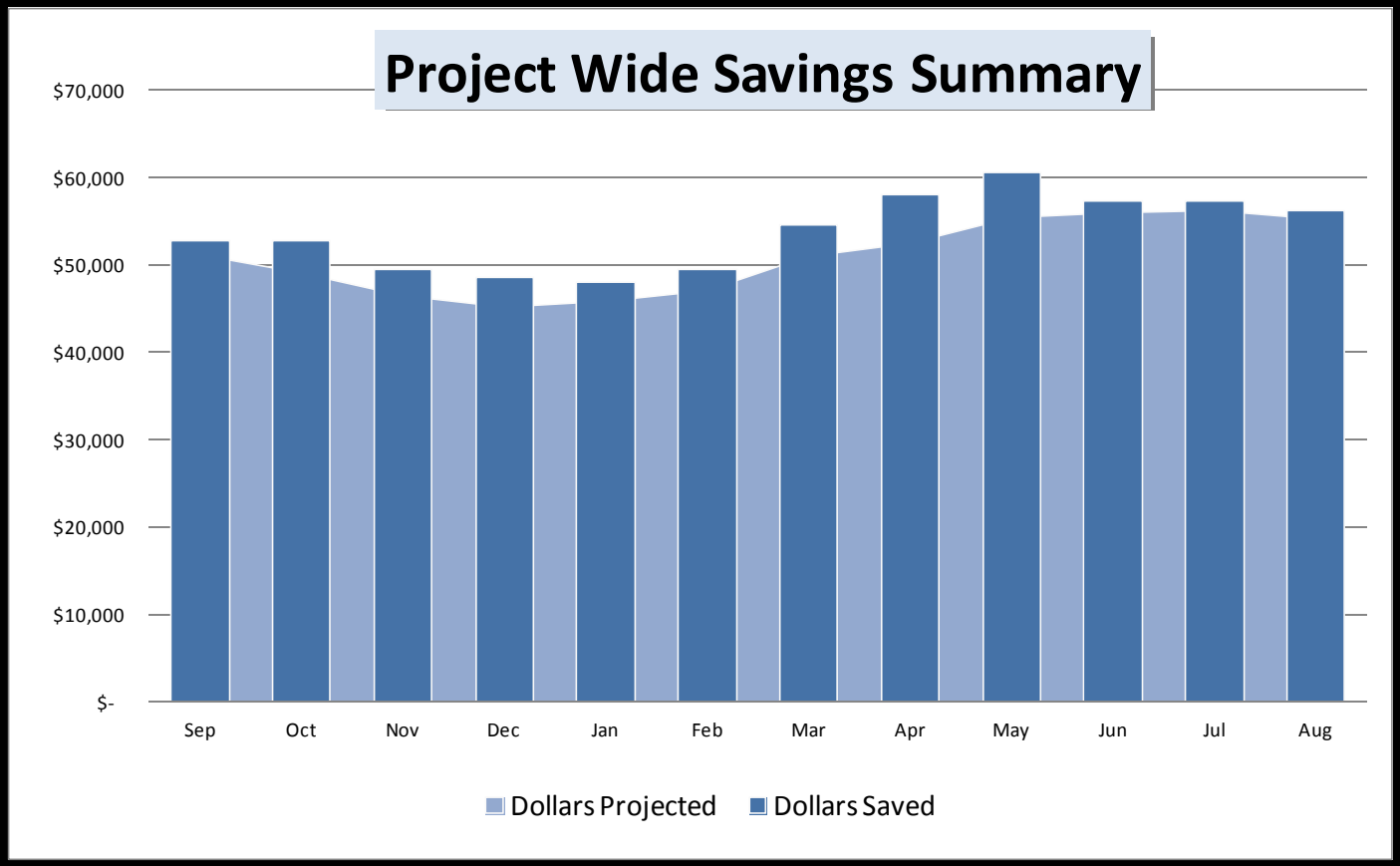
Project Wide Savings Summary



	Dollars Saved	Dollars Projected
Compressed Air Energy Savings	$ 40,731	$ 53,582
Solar Generation	$ 164,330	$ 162,345
Lighting Energy Savings	$ 316,417	$ 278,807
EMS Energy Savings	$ 56,260	$ 49,482
Package Unit Energy Savings	$ 68,182	$ 68,182
TOTALS	**$ 645,920**	**$ 612,398**

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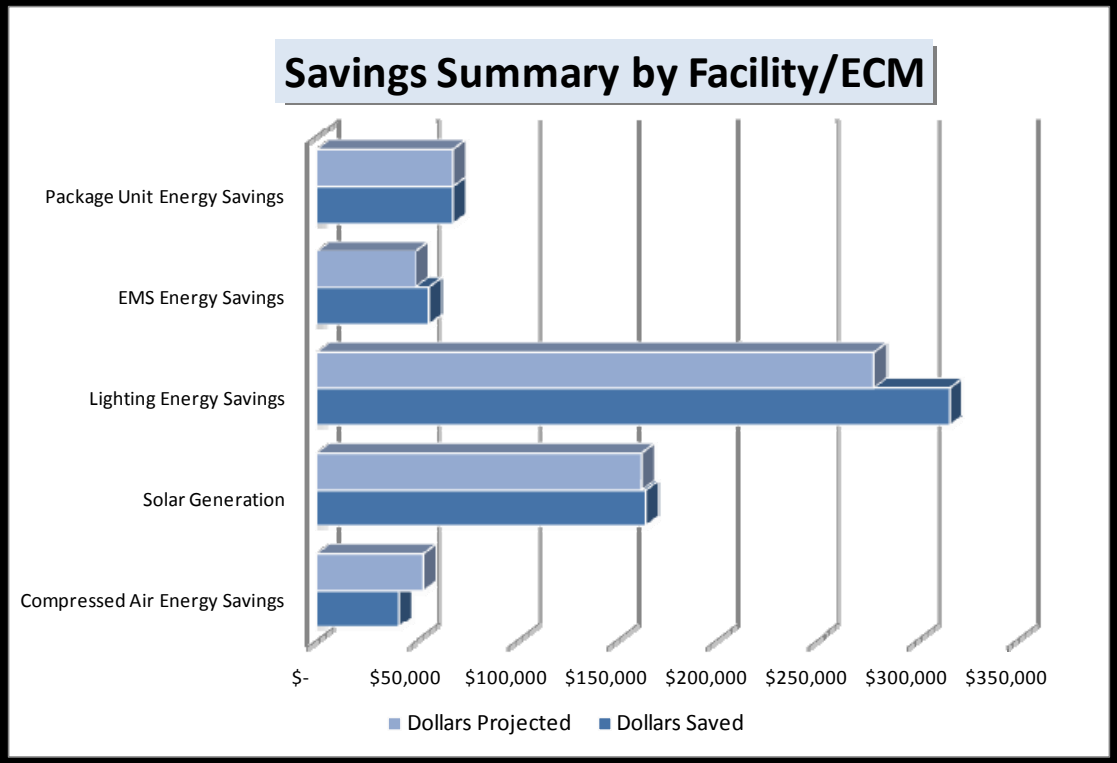
Savings Summary by ECM



Compressed Air Energy Savings	$	40,731
Solar Generation	$	164,330
Lighting Energy Savings	$	316,417
EMS Energy Savings	$	56,260
Package Unit Energy Savings	$	68,182
Total Savings for Year 1	$	645,920
Total Year 1 Achieved Savings (Actual)	$	645,920
Total Year 1 Guaranteed Savings (Contractual)	$	617,557
Year 1 Excess Savings	$	28,363

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Lighting and Environmental Management System

Area	Lighting Savings (kWh)	EMS Savings (kWh)
Building 1	758,733	315,289
Building 2	1,368,827	79,286
Building 3	893,594	113,519
Building 4	505,440	-5,247
Building 5	330,920	191,727
Parking	48,870	N/A
Expected Totals	*3,442,065*	*610,895*
Measured Totals	**3,906,384**	**694,574**

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Solar Generation

Facility	LA MTA RRC	
Month	Metered Generation	Predicted Generation
Jan-10	72,100	75,717
Feb-10	82,860	85,391
Mar-10	129,076	120,589
Apr-10	160,790	135,189
May-10	183,207	160,133
Jun-10	154,737	166,320
Jul-10	152,830	167,385
Aug-10	143,368	158,861
Sep-10	115,400	126,222
Oct-09	113,295	103,486
Nov-09	85,017	81,671
Dec-09	74,554	68,547
Totals	1,467,234	1,449,511

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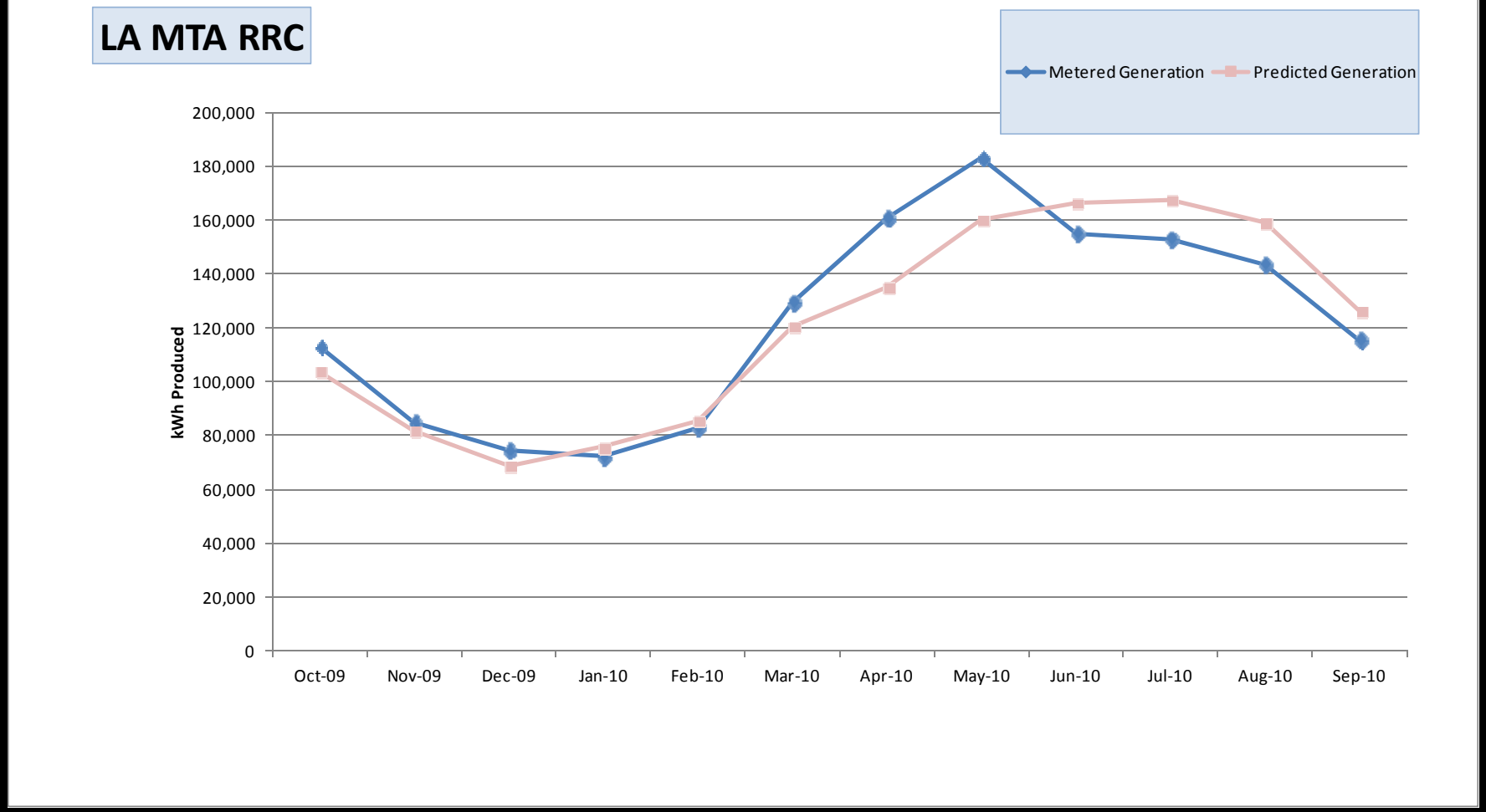
Solar Generation



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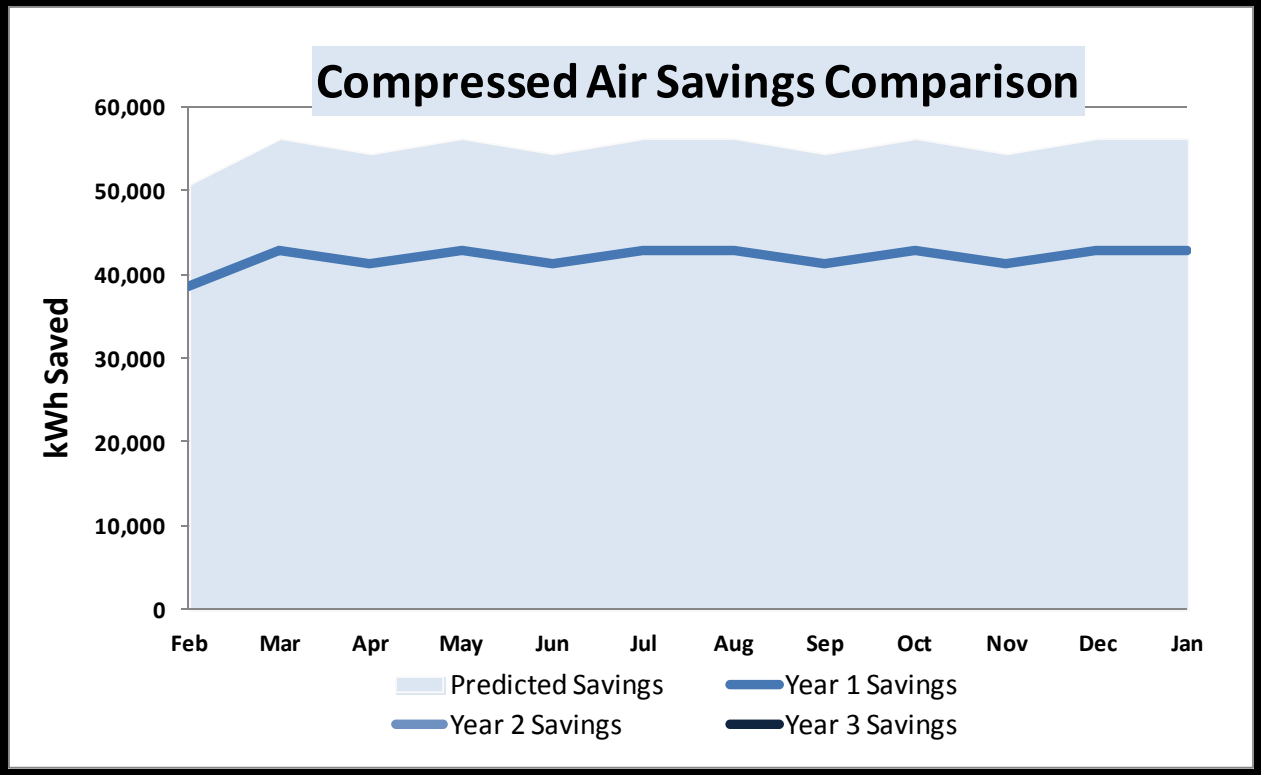
Compressed Air



Month	Year 1 Savings	Predicted Savings
Feb	38,575	50,746
Mar	42,708	56,183
Apr	41,330	54,370
May	42,708	56,183
Jun	41,330	54,370
Jul	42,708	56,183
Aug	42,708	56,183
Sep	41,330	54,370
Oct	42,708	56,183
Nov	41,330	54,370
Dec	42,708	56,183
Jan	42,708	56,183
Totals	502,851	661,505

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MSSC Solar and Energy Efficiency Project

Closing Project Thoughts/Lessons Learned

- From a construction stand point, this project was a success. The project was completed on-time and on-budget, with no significant change orders.
- The public/private partnership model was a success, allowing Metro to finance the project, not pay until the project was complete, with guarantees on our savings.
- All guarantees were exceeded, and the project delivered what we said it would deliver.
- Fact: The solar panels only represent 25% of the total electricity savings, whereas 50% of the savings were from the lighting improvements. Lighting costs are 20% of the solar costs.
- Valuable Lesson: First concentrate on energy efficiency within the building interior and systems (so-called low hanging fruit), the solar or renewable energy piece is just the icing on the cake.

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