

Memorandum



DATE June 8, 2012

TO Honorable Members of the Transportation and Environment Committee:
Linda L. Koop (Chair), Sheffie Kadane (Vice Chair), Sandy Greyson,
Delia Jasso, Vonciel Jones Hill, Pauline Medrano

SUBJECT **Solar Energy Update**

Attached is the briefing document for the Solar Energy Update that will be presented to you on June 11, 2012.

If you have any questions, or need additional information, please let me know.

A handwritten signature in blue ink, appearing to read 'Jill Jordan'.

Jill A. Jordan, P.E.
Assistant City Manager

c: The Honorable Mayor and Members of the City Council
Mary K. Suhm, City Manager
Thomas P. Perkins, Jr. City Attorney
Rosa Ríos, City Secretary
Craig Kinton, City Auditor
Judge C. Victor Lander, Administrative Judge
A.C. González, First Assistant City Manager
Ryan S. Evans, Assistant City Manager
Forest Turner, Assistant City Manager
Joey Zapata, Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Edward Scott, Director, Controller's Office
Frank Libro, Public Information Office
Theresa O'Donnell, Director, Sustainable Development and Construction
Rick Galcerán, Director, Public Works
Stephanie Cooper, Assistant to the City Manager – Council Office

Solar Energy Update

Transportation & Environment
Committee Presentation

June 11, 2012



Background

- Purpose:
 - Update from February 13, 2012 briefing
- Feasible Projects
 - Convention Center
 - Solar Farm(s)
 - DPD/DFD
- Funding Opportunities

City benefits

- Environmental Stewardship
- Texas Natural Resource
- Market Pricing
- Revenue Opportunity
- Proven useful life is 50+ years,
- Low maintenance
- ERCOT reserve capacity
- Reduces escalation of \$74M Electricity Budget

Convention Center



Potential Energy Savings

Total of three system energy produced
= 1,783,376 kWh/yr.

Assumed energy rate 0.6 cents

Total annual savings = \$107,003

* All figures are estimated and could vary depending on final selected system

Possible PV locations

1. Covered Plaza
2. Loading dock
3. C, D, E

Three aspects



1. Solar Array offsets a percentage of the buildings energy use
2. Reduces solar heat gain on the building
3. Covered outdoor courtyard

Solar Farm

- 100 -200 acres of land
- Construct on existing property
 - Energy can be directly used at nearby City facilities (saves money)
 - Photovoltaic solar project
 - Requires connectivity to facilities
 - City can produce energy for wholesale to grid (generates revenue)
 - ONCOR would buy energy generated
- Third party can construct on City property
 - Power Purchase Agreement

Photovoltaic Farm



20 Megawatts on 247 acres w/120,000 panels.

Lowest Cost versus PPA

Ownership	Power Purchase Agreement
City responsible for maintenance	Third party responsible for maintenance
Tax credits to contractors, eligible utility rebates	Developer takes tax credits; owns Renewable Energy Credit
Special Bonds	Long-term cost certainty
City leases land from DWU	No lease required
Budget for legal and financial costs	Include legal and financial in power cost

Police and Fire Stations

- City-wide: 118 DPD/DFD Facilities
- Distributed solar power system
 - Multiple small systems tied together
 - Rooftops or parking structures
 - Photovoltaic
 - Thermal conversion of electric
- 2006 Bond Program
 - Coordinate on-going construction Programs
 - New facilities total integration requirements

Police and Fire Facilities

- Photovoltaic and solar hot water
- Min. power usage = 1727 MW
- Monthly Power savings \$55,244
 - 9.6 cents/KWH, 8 hrs/day of available sunlight
- Project cost @ \$3.5/Watt = 8 Million
- Simple payback of 139 mo. = 11.5 yrs.
- Anticipated Net benefit approx. \$1.395M

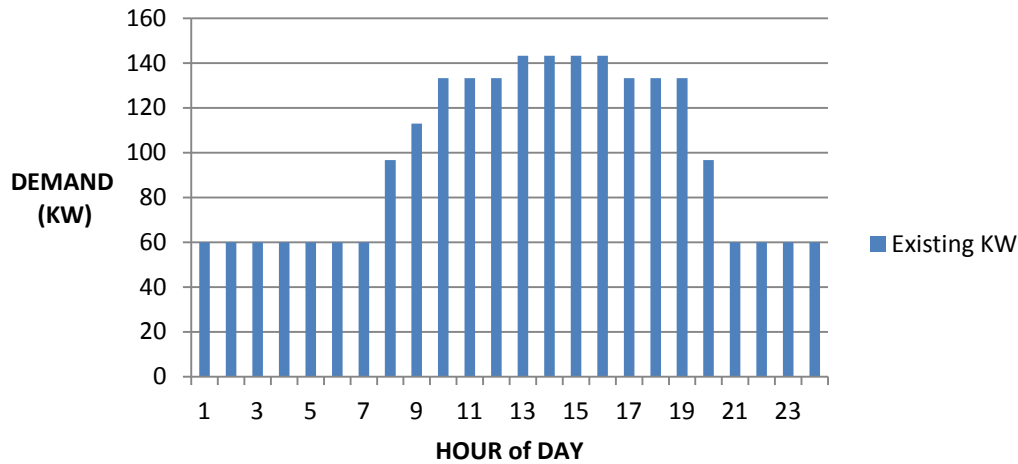
LEED Facility Life Span

Net Present Value = \$924,376

Life span	Year	Estimated Electric Rate	Fossil Fueled Electricity Expense	Accumulated Electricity Cost	Solar Panel
1	2012	\$0.095	\$ 22,868	\$ 22,868	\$ 476,000
5	2016	\$0.071	\$ 17,098	\$ 96,237	
10	2021	\$0.082	\$ 19,821	\$ 189,734	
15	2026	\$0.095	\$ 22,978	\$ 298,124	
20	2031	\$0.111	\$ 26,638	\$ 423,776	
25	2036	\$0.128	\$ 30,880	\$ 569,443	
30	2041	\$0.149	\$ 35,799	\$ 738,309	
35	2046	\$0.172	\$ 41,501	\$ 934,072	
40	2051	\$0.200	\$ 48,111	\$ 1,161,015	
45	2056	\$0.232	\$ 55,774	\$ 1,424,105	
50	2061	\$0.269	\$ 64,657	\$ 1,729,097	

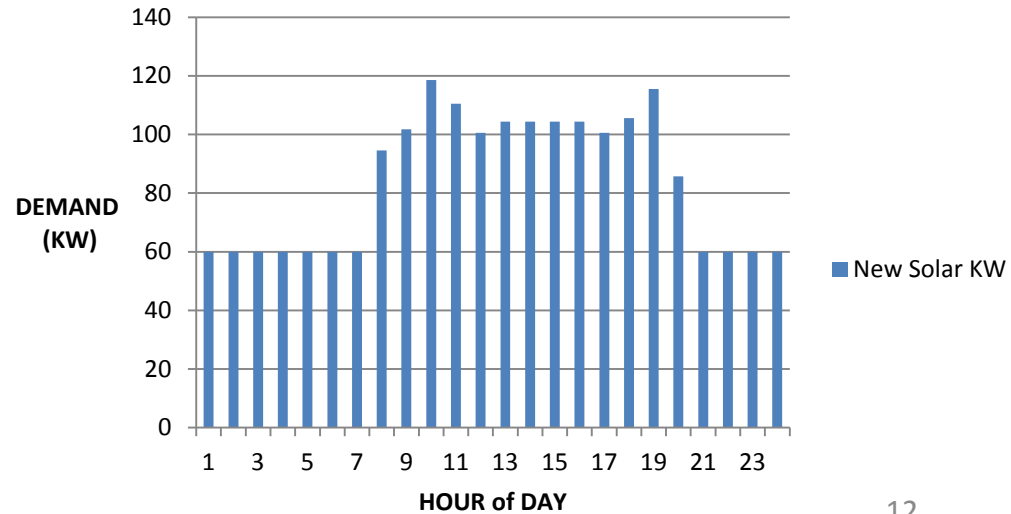
DFD/DPD Load Profile

Existing Load Profile



Average daytime KW decreases from
129 to 104

Load Profile with Solar



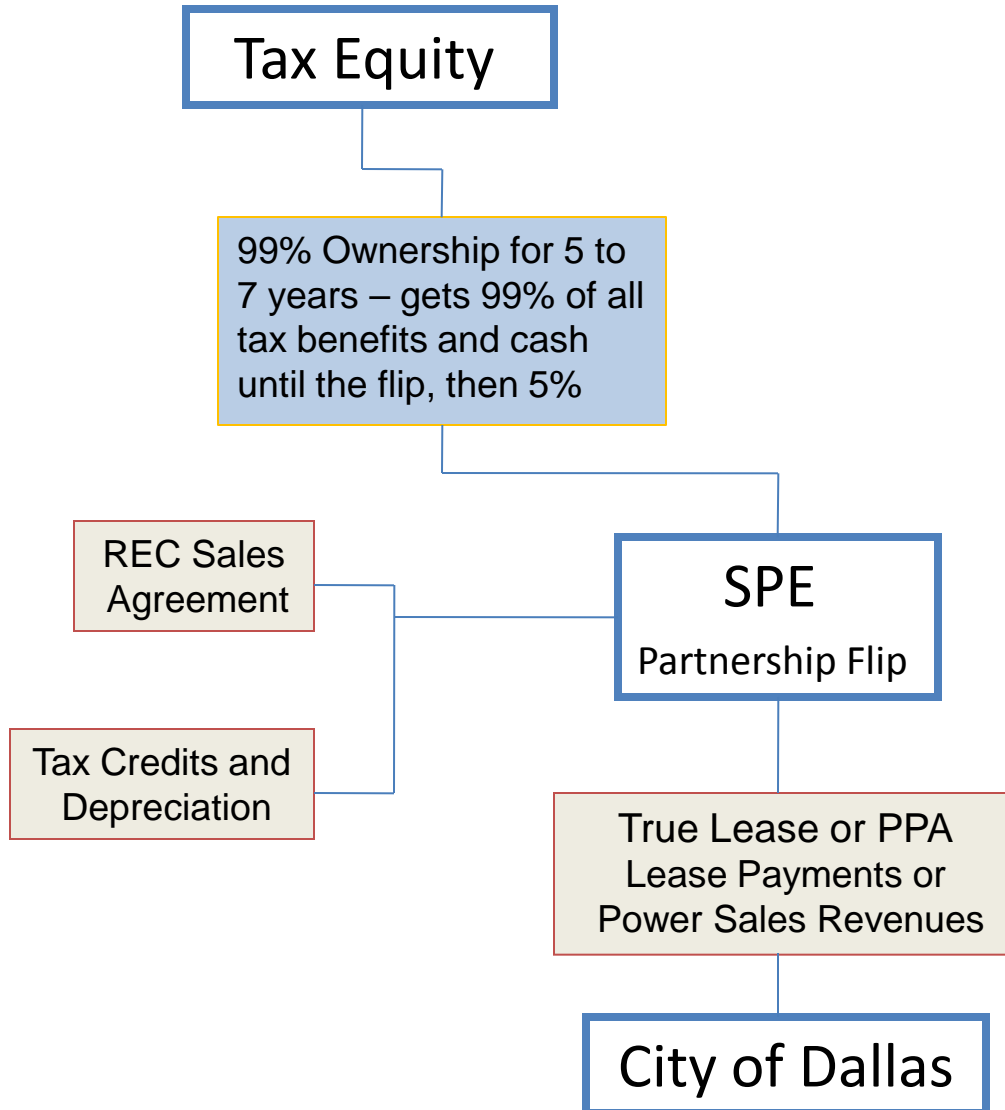
Goals

- Design to maximum Winter KW or roof loading
- Purchase local or made in USA panels
- Installed cost < \$3.50/watt
- Coordinate with 2013 Electricity Procurement
- Apply for State Implementation Plan (SIP) credit

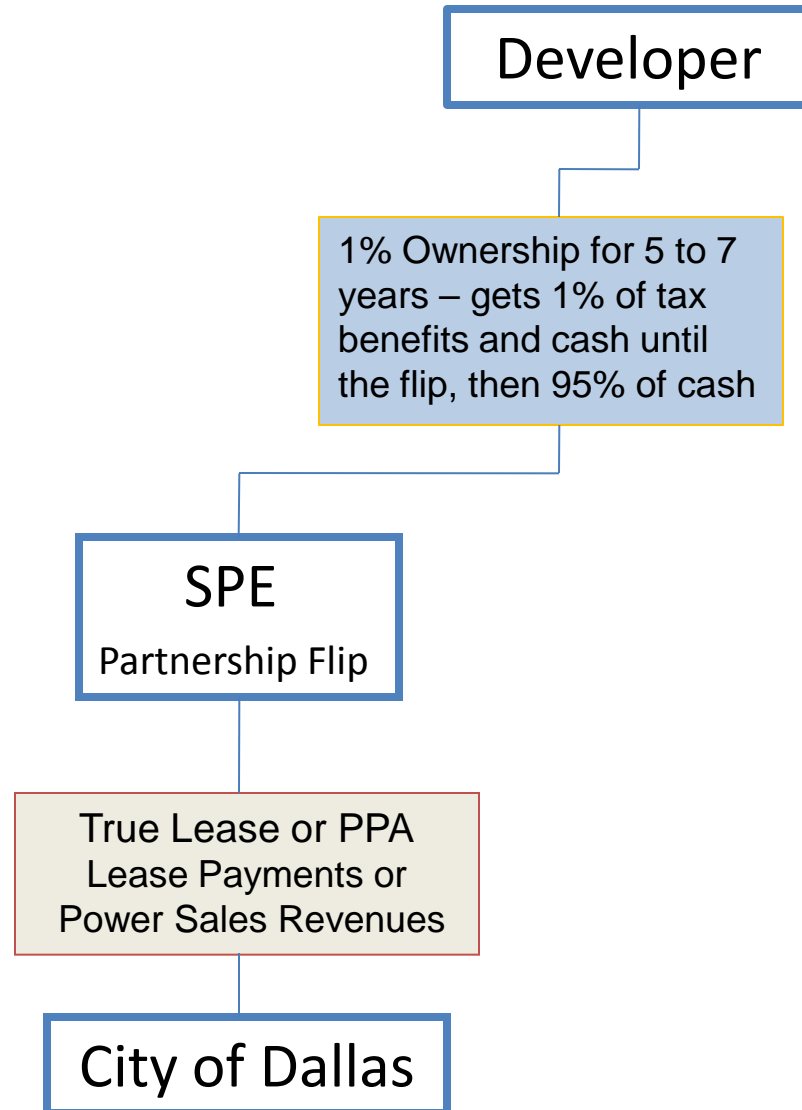
Funding Opportunities

- Economic Development Administration (EDA) - Grant Opportunity (Range \$500K to \$2M)- Sept 14th
- ONCOR- PV Incentives- Fall 2012
- SECO LOANStar Fund – Fall 2012
- QECCB (ARRA) – Pending
- Third Party Lenders

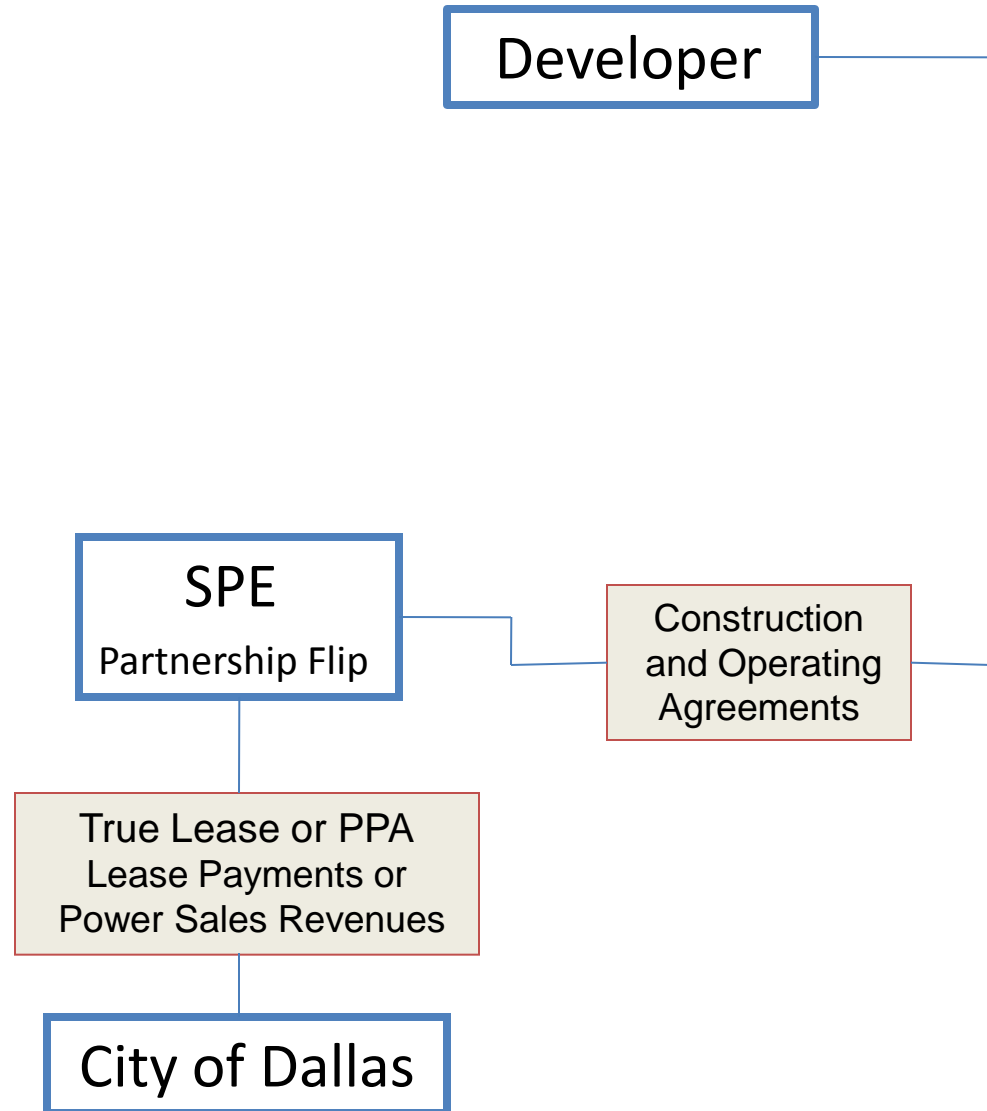
Typical Solar Financing Structure



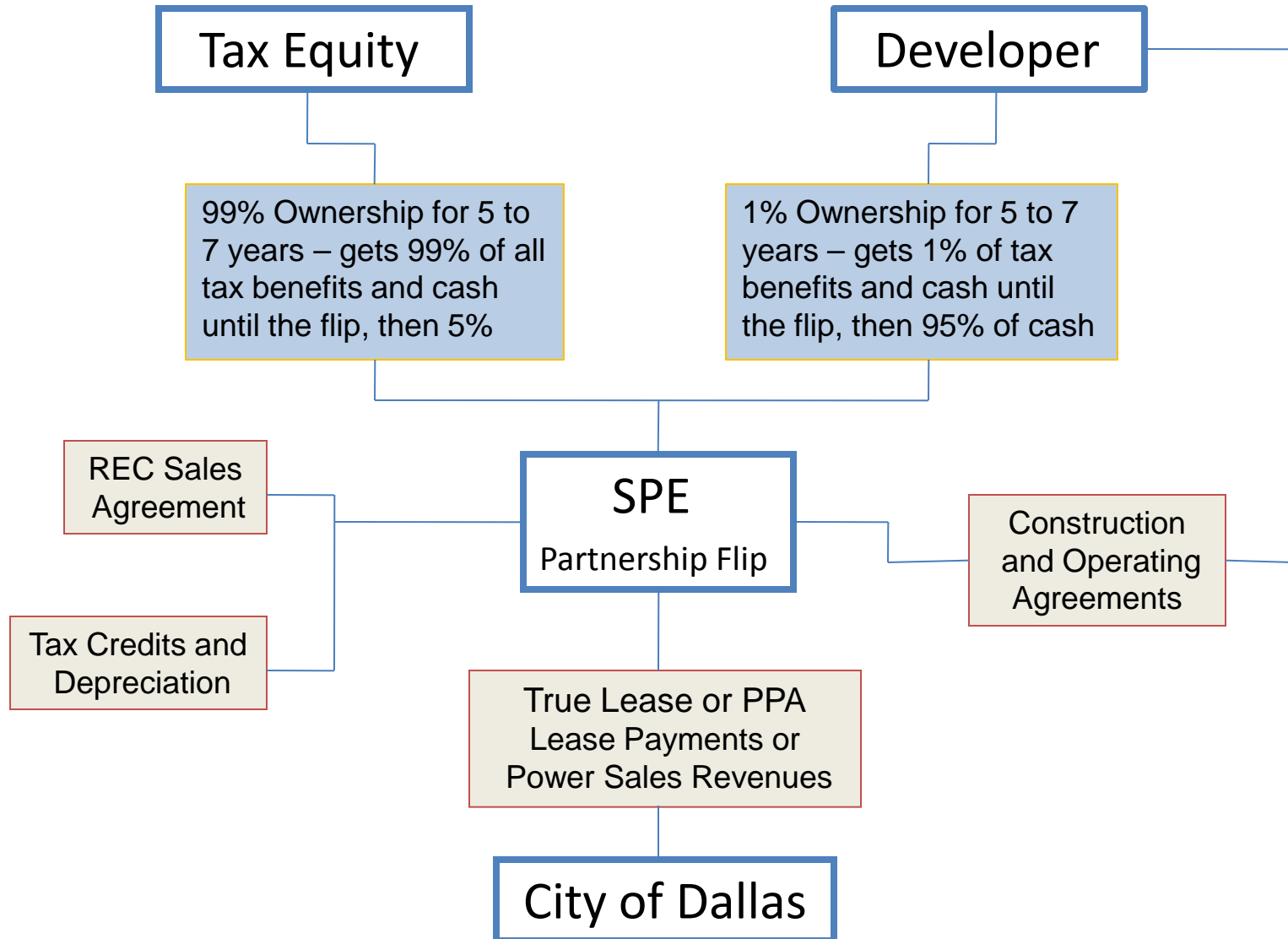
Typical Solar Financing Structure



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Typical Solar Financing Structure



Schedule

- Convention Center Report Due Summer 2012
- Advertise Solar Farm PPA Fall 2012
- Renewable Energy Funding Fall 2012
- Award DFD/DPD Solar Design Winter 2013
- Award DCC Solar Spring 2013
- Award PPA Summer 2013

Recommendations

- Develop debt-free, renewable project funding
- Develop RFP from Convention Center Study
- RFCSP for a 20-year, Solar Farm
- Evaluate on-site solar on new facilities
 - Implement on DPD/DFD
 - Implement with roofing < 15 year payback

Questions

Sustainable involves...

“using methods, systems and materials that won't deplete resources or harm natural cycles”