

# Charting a Course to Energy Independence

**Providence, RI  
August 9-12, 2009**





# Tax Incentives for Renewable Energy

Andy Walker PhD PE

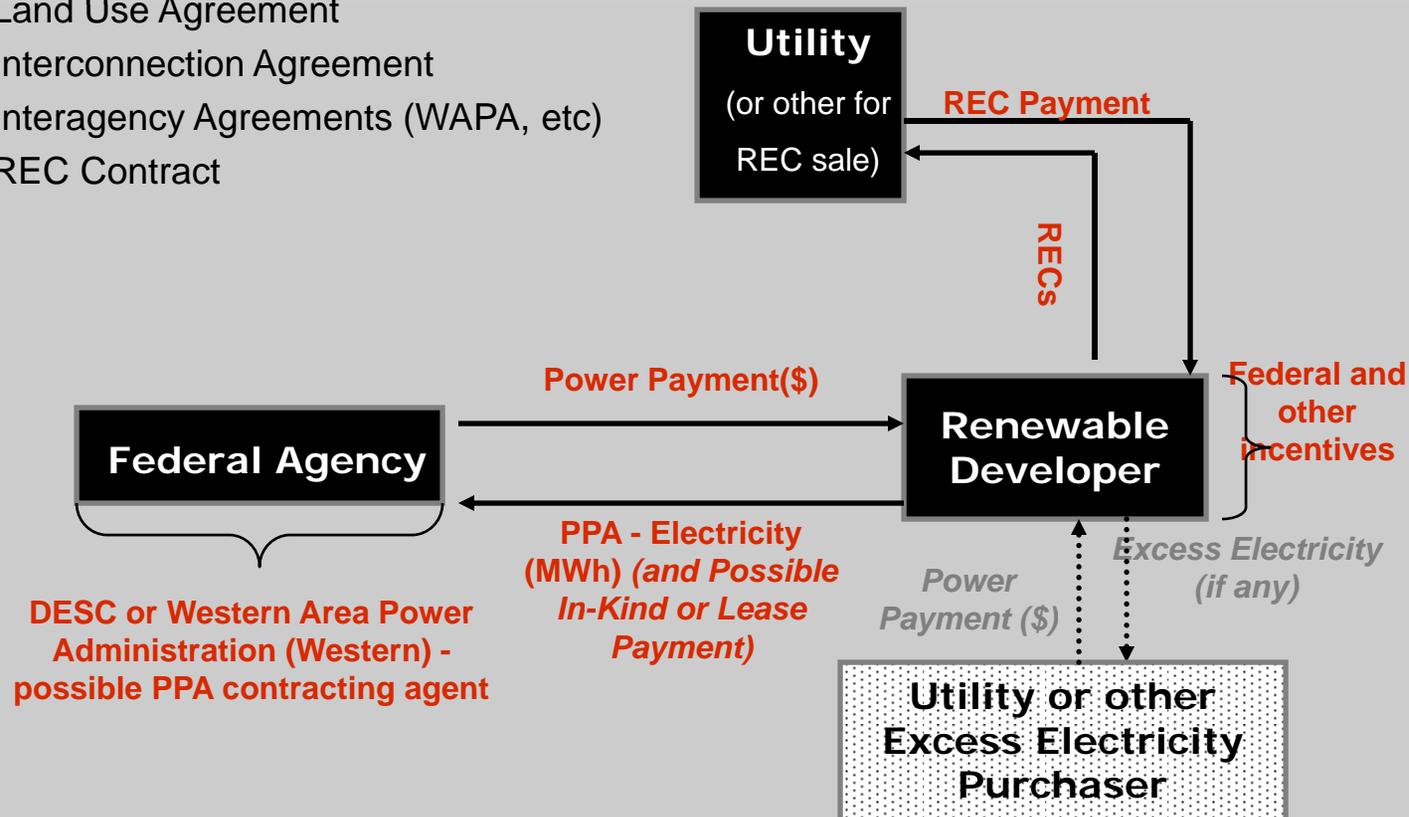
National Renewable Energy Laboratory



# Renewable PPA Diagram

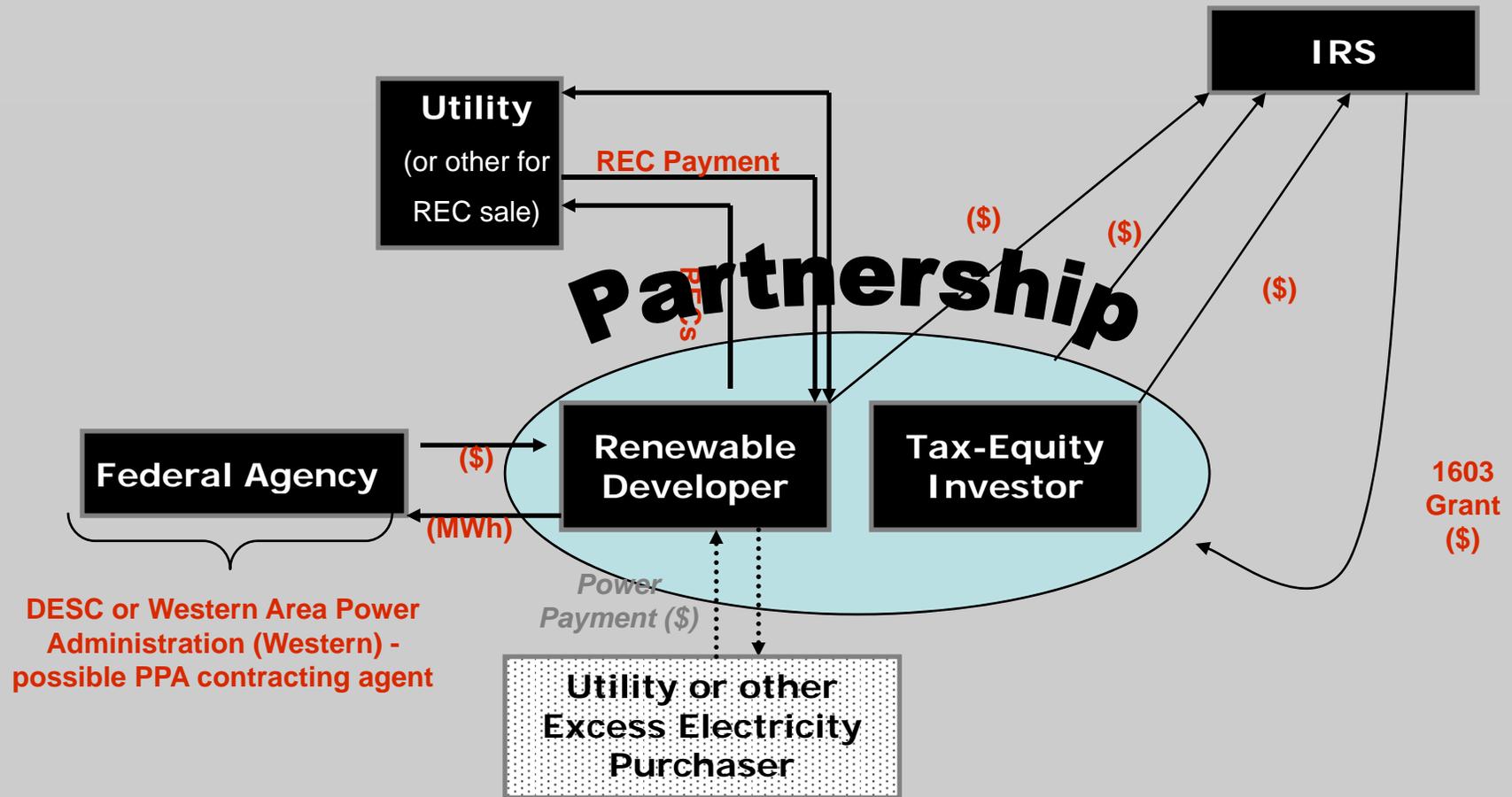
## Agreements

- Power Purchase Agreements (to site and excess to utility)
- Land Use Agreement
- Interconnection Agreement
- Interagency Agreements (WAPA, etc)
- REC Contract





# Renewable PPA Diagram





# Consider an Example



- 1 MW PV System
- Tax Bracket=35%
- Electric Inflation Rate=1.80%
- O&M Inflation Rate= 1.80%
- Installed Cost \$7,000,000
- Utility Rebate \$1,000,000



# Business Investment Tax Credit

- EPAct: 30% CREDIT for projects completed before 12/31/13 (Sec 1337)
- ARRA: Removes caps on tax credits, allows facilities to apply for a grant instead of claiming the credit (Sec 1603) for 2009 and 2010; Choice to take ITC instead of Production Tax Credit
- Unused commercial credits can be carried forward for up to 20 years
- commercial credit is claimed on IRS Form 3468. The residential credit is claimed on IRS Form 5695.
- Authority 26 USC 45

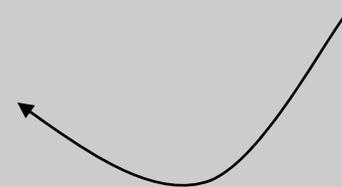


# Accelerated Depreciation

- Depreciation Basis is Capital Cost minus  $\frac{1}{2}$  of Investment Tax Credit:  
 $\$(7,000,000 - \$1,000,000) - (\frac{1}{2} \text{ of } \$1,800,000) = \$5,100,000$
- MACRS Schedule since 1986:

	Percent	Tax Deduction
Year 1	20.00%	\$1,020,000
Year 2	32.00%	\$1,632,000
Year 3	19.20%	\$979,200
Year 4	11.52%	\$587,520
Year 5	11.50%	\$586,500
Year 6	5.76%	\$293,760

Value of this deduction depends on whole tax situation



- EPAct 2005: added other technologies
- Economic Stimulus Act of 2008: 50% depreciation in 2008.
- ARRA: 50% depreciation extended to 2009
- Authority 26 USC 45



## Example: 1 MW PV Other Revenue and Deductions (Expenses)

PV Power to Site (kWh/year)	499,784
PV Power to Utility (kWh/year)	995,305
Utility-Bill Cost Savings (\$/year)	\$80,196
Revenue from Power Sales (\$/year)	\$32,317
REC Production Credit (\$/year)	\$161,470
Annual O&M (\$/year)	-\$14,951



# Example: 1 MW PV Cash Flow Analysis

Year	Revenue Power to Site \$	Revenue Power to Utility (\$)	REC Production Incentive (\$)	MACRS Deduction (\$)	O&M Cost (\$)	Tax Cash Flow (\$)
0						\$1,800,000
1	\$80,196	\$32,317	\$161,470	-\$1,020,000.00	-\$14,951	\$266,339
2	\$81,640	\$32,898	\$161,470	-\$1,632,000.00	-\$15,220	\$479,924
3	\$83,109	\$33,491	\$161,470	-\$979,200.00	-\$15,494	\$250,819
4	\$84,605	\$34,093	\$161,470	-\$587,520.00	-\$15,773	\$113,094
5	\$86,128	\$34,707	\$161,470	-\$586,500.00	-\$16,057	\$112,088
6	\$87,678	\$35,332	\$161,470	-\$293,760.00	-\$16,346	\$8,969
7	\$89,257	\$35,968	\$161,470		-\$16,640	-\$94,519
8	\$90,863	\$36,615	\$161,470		-\$16,940	-\$95,203
9	\$92,499	\$37,274	\$161,470		-\$17,244	-\$95,899
10	\$94,164	\$37,945	\$161,470		-\$17,555	-\$96,608
11	\$95,859	\$38,628	\$161,470		-\$17,871	-\$97,330
12	\$97,584	\$39,323	\$161,470		-\$18,193	-\$98,065
13	\$99,341	\$40,031	\$161,470		-\$18,520	-\$98,813
14	\$101,129	\$40,752	\$161,470		-\$18,853	-\$99,574
15	\$102,949	\$41,485	\$161,470		-\$19,193	-\$100,349
16	\$104,802	\$42,232	\$161,470		-\$19,538	-\$101,138
17	\$106,689	\$42,992	\$161,470		-\$19,890	-\$101,941
18	\$108,609	\$43,766	\$161,470		-\$20,248	-\$102,759
19	\$110,564	\$44,554	\$161,470		-\$20,612	-\$103,591
20	\$112,554	\$45,356	\$161,470		-\$20,983	-\$104,439
21	\$114,580	\$46,172			-\$21,361	-\$48,787
22	\$116,642	\$47,003			-\$21,746	-\$49,665
23	\$118,742	\$47,849			-\$22,137	-\$50,559
24	\$120,879	\$48,711			-\$22,535	-\$51,469
25	\$123,055	\$49,588			-\$22,941	-\$52,396



## Example: 1 MW PV Rate of Return

PV System Installed Cost (\$)	\$7,000,000
Utility Rebate (\$)	\$1,000,000
Federal Tax Credit (\$)	\$1,800,000
After-Incentives PV System Cost (\$)	<b>\$4,200,000</b>
Tax Depr. Basis (\$)	\$5,100,000
Annual O&M (\$/year)	\$14,951
Utility-Bill Cost Savings (\$/year)	\$80,196
Revenue from Power Sales (\$/year)	\$32,317
REC Production Credit (\$/year)	\$161,470
Annual O&M (\$/year)	-\$14,951
<b>Rate of Return</b>	<b>4.7%</b>



# Ways to Improve Tax Situation

Evaluate choices in structuring deal:

- Tax Credit Basis: Whole or Less Rebate
- Investment versus Production Tax Credit
- Sec 1603 Grant versus Tax Credit
- Developer “Contributes” rather than “Sells” to Partnership
- Partnership Flip



# Business Investment Tax Credit (cont.)

- **Comparison of Alternatives**

- **IRS Instructions:** Basis= Installed Cost less any Rebates  
 $(\$7,000,000 - \$1,000,000) * 30\%$  tax credit = **\$1,800,000**  
**MACRS Basis: \$5,100,000**

- **SEIA Instructions:** Basis—Whole installed cost and rebates are declared as income  
 $\$7,000,000 * 30\%$  tax credit = \$2,100,000  
 $-\$1,000,000 * 35\%$  tax bracket = \$350,000  
**\$1,750,000**

**MACRS Basis \$5,950,000**



# Option 2 (SEIA way): 5.7% Rate of Return

Year	Revenue Power to Site \$	Revenue Power to Utility (\$)	Other Cash Flows	REC Production Incentive (\$)	MACRS Deduction (\$)	O&M Cost (\$)	Tax Cash Flow (\$)
0							\$2,100,000
1	\$80,196	\$32,317	\$1,000,000	\$161,470	\$1,190,000.00	-\$14,951	-\$24,161
2	\$81,640	\$32,898	\$0	\$161,470	\$1,904,000.00	-\$15,220	\$575,124
3	\$83,109	\$33,491	\$0	\$161,470	\$1,142,400.00	-\$15,494	\$307,939
4	\$84,605	\$34,093	\$0	\$161,470	\$685,440.00	-\$15,773	\$147,366
5	\$86,128	\$34,707	\$0	\$161,470	\$684,250.00	-\$16,057	\$146,301
6	\$87,678	\$35,332	\$0	\$161,470	\$342,720.00	-\$16,346	\$26,105
7	\$89,257	\$35,968	\$0	\$161,470		-\$16,640	-\$94,519
8	\$90,863	\$36,615	\$0	\$161,470		-\$16,940	-\$95,203
9	\$92,499	\$37,274	\$0	\$161,470		-\$17,244	-\$95,899
10	\$94,164	\$37,945	\$0	\$161,470		-\$17,555	-\$96,608
11	\$95,859	\$38,628	\$0	\$161,470		-\$17,871	-\$97,330
12	\$97,584	\$39,323	\$0	\$161,470		-\$18,193	-\$98,065
13	\$99,341	\$40,031	\$0	\$161,470		-\$18,520	-\$98,813
14	\$101,129	\$40,752	\$0	\$161,470		-\$18,853	-\$99,574
15	\$102,949	\$41,485	\$0	\$161,470		-\$19,193	-\$100,349
16	\$104,802	\$42,232	\$0	\$161,470		-\$19,538	-\$101,138
17	\$106,689	\$42,992	\$0	\$161,470		-\$19,890	-\$101,941
18	\$108,609	\$43,766	\$0	\$161,470		-\$20,248	-\$102,759
19	\$110,564	\$44,554	\$0	\$161,470		-\$20,612	-\$103,591
20	\$112,554	\$45,356	\$0	\$161,470		-\$20,983	-\$104,439
21	\$114,580	\$46,172	\$0			-\$21,361	-\$48,787
22	\$116,642	\$47,003	\$0			-\$21,746	-\$49,665
23	\$118,742	\$47,849	\$0			-\$22,137	-\$50,559
24	\$120,879	\$48,711	\$0			-\$22,535	-\$51,409
25	\$123,055	\$49,588	\$0			-\$22,941	-\$52,396



# Developer “Contributes” rather than “Sells” to Partnership

- Developer “Sells” to partnership: pay taxes on difference between Fair Market Value and Cost Basis (often around 10% of Capital Cost).
- “Contributes” to partnership: gets paid distributions over several years.
- Benefits:
  - Deferral of tax to future years, when it could be paid by distributions from the partnership
  - improvement in after-tax yield for the Developer without affecting the yield of the tax investor



# Partnership Flip

- Tax Cash Flow Positive in early years, Negative in later years.
- Partners have different situations (Tax Investor is rich and has tax liability, Developer is poor)
- Early on, Tax Investor has 99% of shares and exploits tax credits
- Tax Investor and Developer “Flip” equity positions
- Later on, Developer gets 95% of shares and gets project revenues but pays lower taxes than Tax Investor would
- Timing matters: Any delay in the flip timing provides a benefit to the Tax Investor at the expense of the Developer



# Example: 1 MW PV Rate of Return With Partnership Flip

Extreme Case: Tax Investor: 35% Bracket, Developer 0% Bracket

PV System Installed Cost (\$)	\$6,966,303
Federal Tax Credit (\$)	\$2,089,891
After-Incentives PV System Cost (\$)	<b>\$4,876,412</b>
Tax Depr. Basis (\$)	\$5,921,358
Annual O&M (\$/year)	\$14,951
Utility-Bill Cost Savings (\$/year)	\$80,196
Revenue from Power Sales (\$/year)	\$32,317
REC Production Credit (\$/year)	\$161,470
Annual O&M (\$/year)	-\$14,951
<b>Rate of Return</b>	<b>8.6%</b>



# Conclusions

- Deal must be optimally structured to compete.
- Depends on knowledge of specialized tax code.
- Requires complete Cash Flow Analysis, Model of Party's Tax Situation.
- Consider all alternatives.
- Know the right questions to ask a tax attorney.



Thank You!