

## APPENDIX D

## SAMPLE DCPVSIMP PROGRAM OUTPUT

THIS PERFORMANCE ESTIMATE IS FOR MADISON, WI  
 30 W SOLAREX MSX-30 1. IN PARALLEL 1. IN SERIES  
 LOAD VOLTAGE= 12.0 SLOPE=43.0 DEGREES  
 MAX POWER TEMP. COEFFICIENT =0.0038 TYPICAL DAY SEGMENTS = 5

MO	PV KWH	MAX KWH	POA KWH	T AVG( C)	Kt-bar	WATER m <sup>3</sup>
1	1.74	2.57	21.00	-8.4	0.449	0.
2	2.23	3.24	26.73	-5.9	0.498	0.
3	3.14	4.47	37.57	-1.9	0.535	0.
4	2.91	3.95	34.52	8.8	0.470	0.
5	3.34	4.42	39.51	14.6	0.495	0.
6	3.42	4.40	40.23	19.6	0.517	0.
7	3.70	4.69	43.44	22.1	0.544	0.
8	3.73	4.77	43.87	20.1	0.561	0.
9	3.19	4.14	37.58	16.9	0.535	0.
10	2.47	3.32	29.25	10.6	0.480	0.
11	1.57	2.21	18.83	2.5	0.406	0.
12	1.25	1.81	15.05	-3.6	0.375	0.

YEARLY TOTAL PV KWH OUTPUTS FOR DIRECT-COUPLED, ANALYTICAL  
 MAX-POWER, AND

SIMPLIFIED MAX POWER CALC. MODES ARE:

32.7 44.0 44.6

THE EFFECTIVENESS IS = 0.743

YEARLY CU.METERS OF WATER PUMPED = 0.0000000E+00

## SAMPLE DCPVDET PROGRAM OUTPUT

THIS SIMULATION IS FOR MADISON, WI  
 30 W SOLAREX MSX-30 1.IN PARALLEL 1.IN SERIES  
 LOAD VOLTAGE= 12.0 SLOPE=43.0 DEGREES  
 MAX-POWER TEMP. COEFF.= 3.8000001E-03

MO	PV KWH	MAX KWH	IH	MJ/M2POA	MJ/M2T	AVG(C)	Hext	MJ/M2Kt-bar
1	1.76	2.66	183.32	296.52	-8.4	407.88	0.4494	0.
2	2.13	3.13	255.74	356.88	-6.0	513.23	0.4983	0.
3	3.28	4.67	426.72	545.87	-1.9	797.56	0.5350	0.
4	2.97	4.01	470.96	489.11	8.7	1001.96	0.4700	0.
5	3.33	4.35	598.91	545.68	14.6	1208.87	0.4954	0.
6	3.42	4.38	638.34	558.88	19.6	1233.76	0.5174	0.
7	3.72	4.69	674.19	606.81	22.1	1239.11	0.5441	0.
8	3.76	4.80	615.89	614.04	20.0	1097.00	0.5614	0.
9	3.22	4.18	454.83	526.62	16.8	849.45	0.5354	0.
10	2.51	3.36	304.33	412.99	10.5	633.56	0.4803	0.
11	1.65	2.33	174.24	274.81	2.4	429.61	0.4056	0.
12	1.24	1.80	132.65	207.17	-3.7	353.84	0.3749	0.

YEARLY TOTAL PV KWH OUTPUTS FOR DIRECT-COUPLED, ANALYTICAL  
 MAX-POWER, AND SIMPLIFIED MAX POWER MODES ARE:

33.0 44.4 44.9

RATIO:DIRECT-COUPLED/MAX-POWER KWH=0.744 YEARLY M3 OF WA-  
 TER= 0.

## APPENDIX E

### Additional Maximum Power-Tracked Comparison Results

This section supplements Section 6.1 with five additional graphs and a table listing the January, July, and annual kWh results for each of 12 cases, for 4 models.

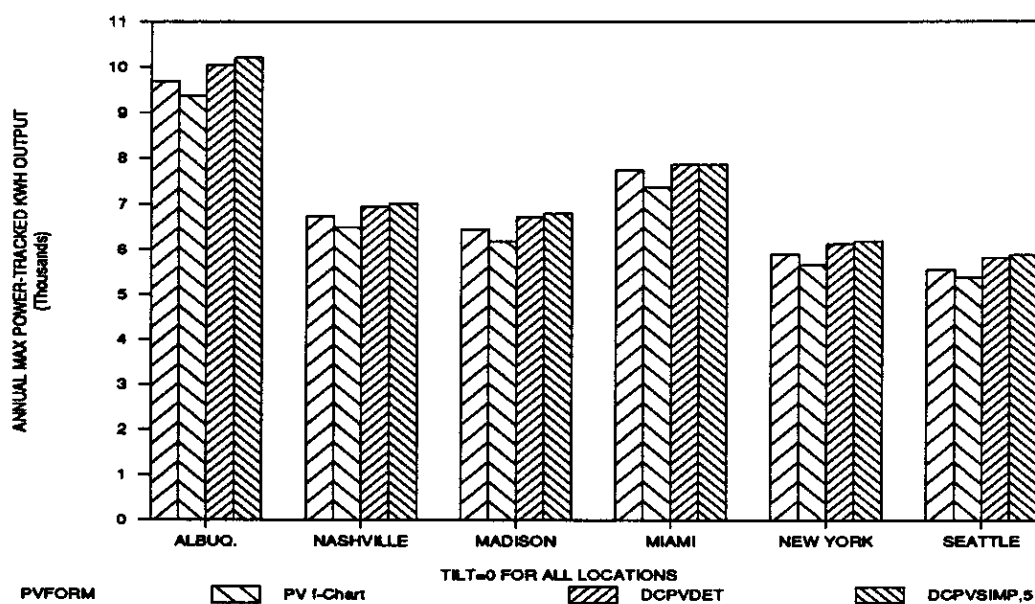


Figure E.1 Annual Output by Location, Tilt = Horiz.

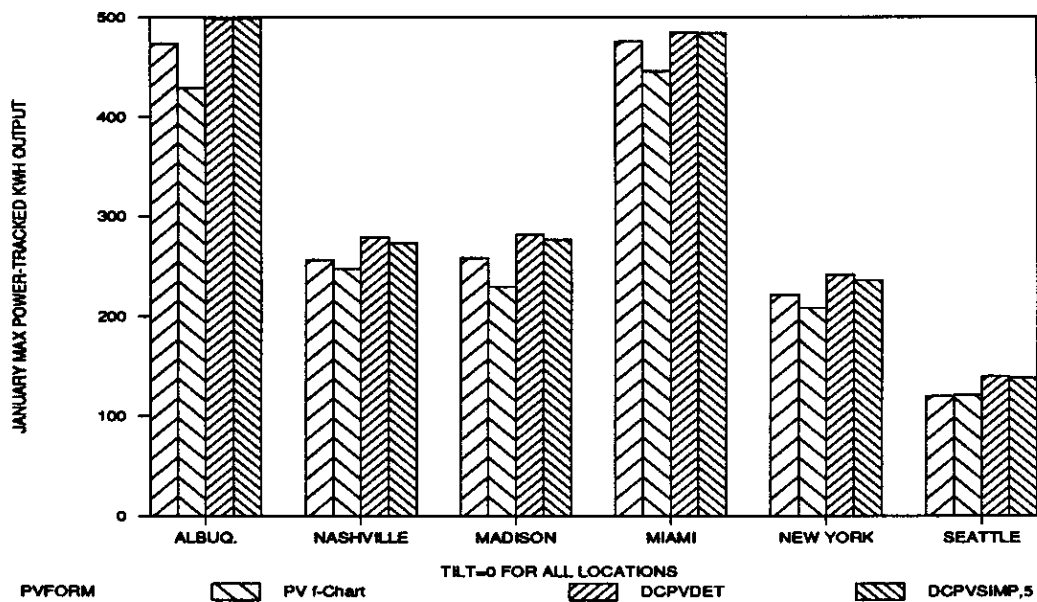


Figure E.2 January Output by Location, Tilt = Horiz.

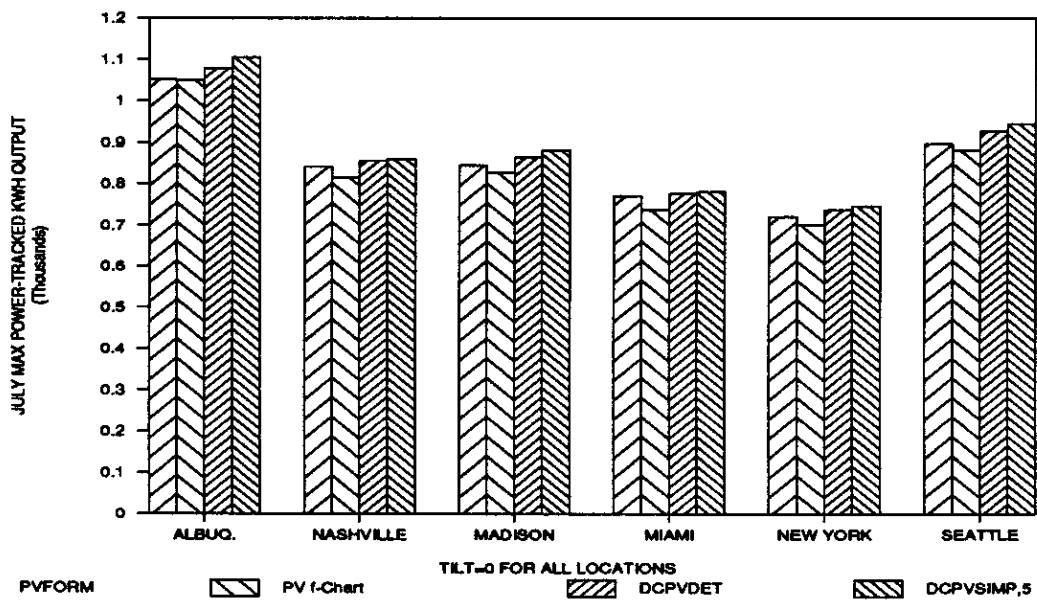


Figure E.3 July Output by Location, Tilt = Horiz.

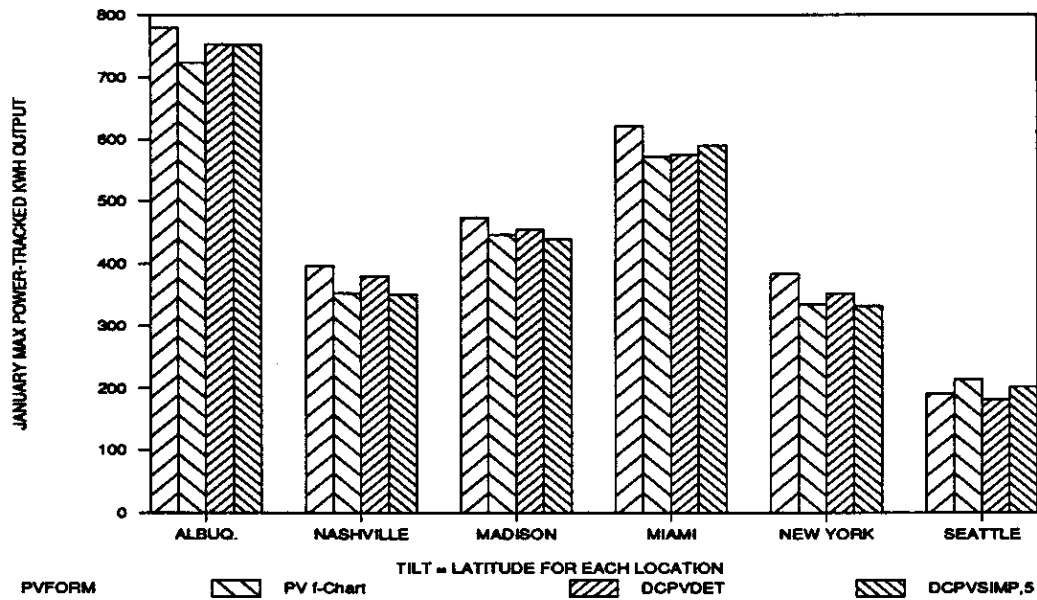


Figure E.4 January Output by Location, Tilt = Lat.

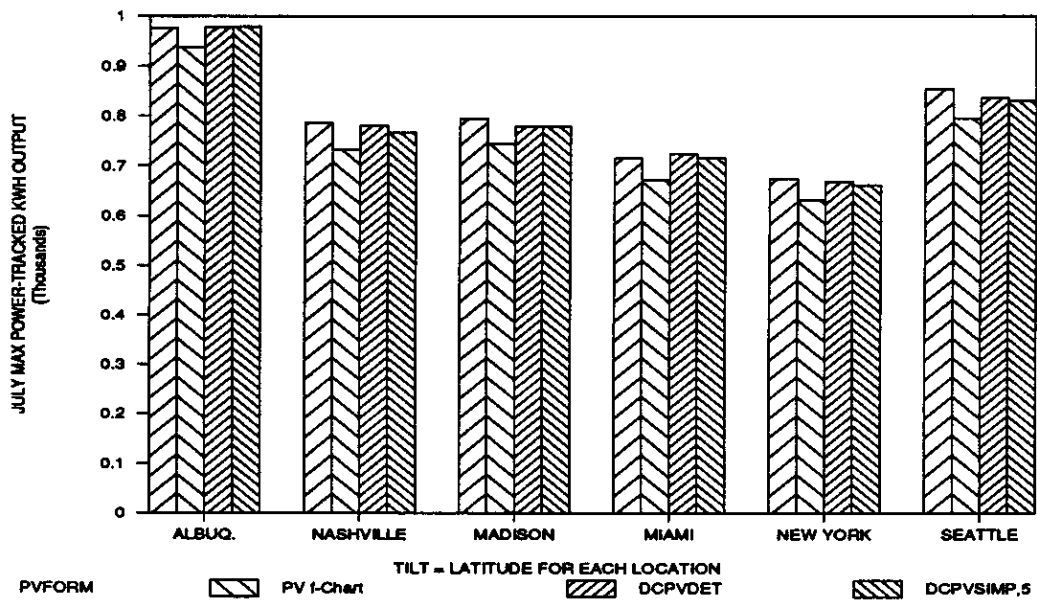


Figure E.5 July Output by Location, Tilt = Lat.

Table E.1 Maximum Power-Tracked DC kWh for 4.5 kW Tri-Solar Array

case	PVFORM			PV f-Chart			DCPVDET			DCPVSIMP-5		
	Jan	Jul	Ann	Jan	Jul	Ann	Jan	Jul	Ann	Jan	Jul	Ann
Alb,35°	779	976	11340	723	938	10777	752	977	11275	751	979	11354
Alb,0°	473	1051	9698	429	1051	9359	499	1079	10049	498	1105	10213
Nash,36°	396	786	7498	353	733	6937	380	779	7371	351	766	7261
Nash,0°	257	841	6723	248	815	6486	279	856	6947	274	860	7005
Mad,43°	473	794	7580	447	743	7063	454	778	7430	439	779	7382
Mad,0°	259	845	6447	230	827	6174	282	865	6713	277	882	6789
Mia,26°	621	715	8408	572	673	7819	574	723	8201	589	715	8201
Mia,0°	474	771	7749	444	736	7371	484	777	7875	483	781	7864
NY,41°	384	675	6775	334	632	6196	352	669	6585	332	661	6483
NY,0°	222	720	5882	208	702	5652	242	736	6116	236	746	6170
Sea,48°	190	853	6187	214	794	5887	180	835	6023	201	830	6068
Sea,0°	120	898	5544	121	880	5380	140	926	5806	138	945	5870
Lat,% diff w/r to DET	5.6	0.8	1.9	-1.9	-5.2	-4.7	0	0	0	-1.1	-0.7	-0.3
Hor.%, diff w/r to DET	-6.3	-2.2	-3.4	-12.7	-4.4	-7.1	0	0	0	-1.0	1.5	0.9
Total, % diff w/r to DET	0.6	-0.8	-0.6	-6.4	-4.8	-5.9	0	0	0	-1.1	0.5	0.3

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