



Parliamentary Budget Office - Election Policy Costing

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Proposal Title: Empowering Homes Program

Cluster: Planning and Environment

General Government Sector Impacts

	2018-19 \$'000	2019-20 \$'000	2020-21 \$'000	2021-22 \$'000	4 year Total \$'000
Expenses (ex. depreciation)		7,886	15,622	24,413	47,921
Depreciation					-
Less: Offsets		7,886	15,622	24,413	47,921
Revenue					-
Net Operating Balance:	-	-	-	-	-
Capital Expenditure	-	-	-	-	-
Capital Offsets					
Net Capital Expenditure:	-	-	-	-	-
Net Lending/(Borrowing):	-	-	-	-	-
Total State Sector Impacts					
Net Lending/(Borrowing):	-	-	-	-	-

Notes and costing assumptions

The policy proposes to support the rollout of up to 300,000 solar photovoltaic (PV) and battery systems for households across NSW over 10 years, from July 2019. To meet this target, the policy proposes:

- the government will enter into partnerships with NSW businesses, to provide and install solar PV and battery systems for households (see diagram below)
- interest-free loans, which households are able to apply for from the solar PV and battery businesses when purchasing the solar-battery and battery systems

The policy specifies that only owner-occupiers of homes with annual household income of up to \$180,000 are eligible for the program. In addition, the Department of Planning and Environment is to:

- allocate \$50 million from its Smart Energy for Homes and Business program to meet the cost of this policy
- absorb the administration costs associated with the program.

The PBO estimates the cost of the policy is

- nil by the end of the forward estimates in 2021-22
- \$427.4 million by 2028-29, when the last of tranche of loans is disbursed (see table next page)
- \$670.4 million by 2037-38, when the last of the expected repayments are made (see Appendix A).

Notes and costing assumptions continued:

(\$000s)	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	Total by 2028-29
Expenses											
Loan default expenses	96	287	527	826	1,185	1,604	2,083	2,586	3,063	3,515	15,771
Interest expense s	3,970	11,419	19,872	29,580	40,235	51,532	63,163	73,333	81,150	86,838	461,092
Administration-related	3,820	3,916	4,014	4,114	4,217	4,322	4,430	4,541	4,655	4,771	42,800
DPE offsets											
Smart Energy for Homes and Businesses	4,066	11,707	20,399	13,320							49,492
Administration-related expenses to be absorbed	3,820	3,916	4,014	4,114	4,217	4,322	4,430	4,541	4,655	4,771	42,800
Total net cost / (saving)	0	0	0	17,085	41,420	53,136	65,246	75,919	84,213	90,353	427,371

The key driver underlying the nil impact over the forward estimates are the offsets from the Smart Energy for Homes and Businesses program (totalling \$49.5 million), which the PBO has reprofiled to meet the expected expenses for each year. Funds reallocated from this program are expected to be exhausted in 2022-23.

The costs are sensitive to changes to interest rate e.g. future increases in the interest rate will increase the cost of future and past loan disbursements that are yet to reach maturity. However, this cost may be offset by flow-on impacts from technological improvements, which can reduce the cost of solar PV and battery systems and thereby potentially reducing the amount of loan disbursements and interest expenses borne by government. The potential cost reductions can be negotiated with solar PV and battery businesses every 3 years (consistent with the policy's assumptions), to pass on savings to households and the interest expenses borne by the government.

Profile of solar-battery and battery system installations over 10 years

The table below sets out the phased increase in household installations of (1) solar PV and battery system and (2) battery systems only from 2019-20 to 2028-29.

The phased increase is based on Treasury's analysis of the likely uptake rate and the policy's assumption that:

- 30% of the 300,000 systems will be for solar PV and battery systems
- 70% of the 300,000 systems will be battery systems only.

Consistent with the policy's assumptions, Treasury has also capped the uptake amount which it estimated to be 8,000 systems in 2019-20, rising to 42,000 systems by 2026-27.

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	Total by 2028-29
Battery system	5,600	11,200	14,000	17,500	21,000	24,500	28,000	29,400	29,400	29,400	210,000
Solar PV and battery system	2,400	4,800	6,000	7,500	9,000	10,500	12,000	12,600	12,600	12,600	90,000
Total	8,000	16,000	20,000	25,000	30,000	35,000	40,000	42,000	42,000	42,000	300,000

Interest-free loans for households

The policy states that solar PV and battery businesses will administer the interest-free loans provided under the partnership. The policy also specifies that the interest-free loan is capped at \$9,000 for battery systems and \$14,000 for solar PV and battery system, with the repayment period of 8 years for solar PV and battery systems and 10 years for battery systems. To fund the interest-free loans, the policy and Treasury assumes the government will source the funds for the loans at a market-based rate of 5.31% over the entire duration of the program. In addition, the policy assumes loan default rates to be a maximum of 2% of all loans disbursed during the year. The PBO notes the assumed default rate is broadly consistent with that for household mortgages in Australia and appears reasonable.

Based on the above considerations, the estimated cost of interest-free loans and defaults is estimated to be:

- \$36.2 million by the end of the forward estimates in 2021-22
- \$476.9 million by 2028-29, when the last of tranche of loans is disbursed (see table below)
- \$719.8 million when the last of the expected repayments are made in 2037-38 (see Appendix A).

The estimates are based on Treasury's modelling and assumes the full take-up rate of interest-free loans based on the profile outlined above, and the maximum loan default rates specified by the policy.

Notes and costing assumptions continued:

(\$000s)	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	Total by 2028-29
Loans disbursed											
Battery system	50,400	100,800	126,000	157,500	189,000	220,500	252,000	264,600	264,600	264,600	1,890,000
Solar PV and battery system	33,600	67,200	84,000	105,000	126,000	147,000	168,000	176,400	176,400	176,400	1,260,000
Total	84,000	168,000	210,000	262,500	315,000	367,500	420,000	441,000	441,000	441,000	3,150,000
Loan payback											
Battery system	-5,040	-15,120	-27,720	-43,470	-62,370	-84,420	-109,620	-136,080	-162,540	-189,000	-835,380
Solar PV and battery system	-4,200	-12,600	-23,100	-36,225	-51,975	-70,350	-91,350	-113,400	-131,250	-144,900	-679,350
Total	-9,240	-27,720	-50,820	-79,695	-114,345	-154,770	-200,970	-249,480	-293,790	-333,900	-1,514,730
Cumulative loan balance											
Battery system	45,360	131,040	229,320	343,350	469,980	606,060	748,440	876,960	979,020	1,054,620	
Solar PV and battery system	29,400	84,000	144,900	213,675	287,700	364,350	441,000	504,000	549,150	580,650	
Total	74,760	215,040	374,220	557,025	757,680	970,410	1,189,440	1,380,960	1,528,170	1,635,270	
Interest expenses											
Battery system	2,409	6,959	12,178	18,233	24,957	32,184	39,744	46,569	51,989	56,003	291,224
Solar PV and battery system	1,561	4,461	7,695	11,347	15,278	19,348	23,418	26,764	29,161	30,834	169,867
Total	3,970	11,419	19,872	29,580	40,235	51,532	63,163	73,333	81,150	86,838	461,092
Default expenses											
Battery system	71	212	388	609	873	1,182	1,535	1,905	2,276	2,646	11,695
Solar PV and battery system	25	76	139	217	312	422	548	680	788	869	4,076
Total	96	287	527	826	1,185	1,604	2,083	2,586	3,063	3,515	15,771
Total interest and default expenses	4,066	11,707	20,399	30,406	41,420	53,136	65,246	75,919	84,213	90,353	476,863

The PBO notes that the costs are sensitive to changes to interest rate changes over the life of program. Depending on whether the interest rate is fixed or variable, the government would bear additional interest expense if the interest rates increase (i.e. variable interest loans), or forego interest expense reductions if the interest rates decrease (i.e. fixed interest loans).

Offsets from DPE's Smart Energy for Homes and Businesses program

The policy states that DPE is to allocate \$50 million from its existing Smart Energy for Homes and Businesses program to meet the cost of this policy. This program promotes technologies to help homes and businesses feed energy to the electricity grid or reduce energy usage, during peak usage periods.

Based on Treasury's review of the expected balance available when the policy commences, the PBO estimates that \$49.5 million can be reallocated from this program by 2021-22, which is when the program is due to finish (see table below). This amount is slightly less than the \$50 million specified in the policy because \$0.5 million is estimated to have been already spent prior to the commencement of the policy. The PBO has revised the profile of offsets from this program to reflect the expected interest and loan default expense stated above. The PBO estimates that the offsets will be exhausted in 2022-23.

(\$000s)	2019-20	2020-21	2021-22	2022-23	Total
Current Smart Energy for Homes and Businesses program	12,150	14,715	22,627		49,492
PBO revised offset profile	4,066	11,707	20,399	13,320	49,492

Administration costs to be absorbed by DPE

The policy states that DPE is to absorb the cost of administering the policy. Based on Treasury's review of the likely administration costs, the PBO estimates that DPE will absorb:

- \$11.8 million by the end of the forward estimates in 2021-22
- \$42.8 million by 2028-29, when the last of tranche of loans is disbursed (see table below)
- \$91.5 million when the last of the expected repayments are made in 2037-38 (see Appendix A).

(\$000s)	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	Total by 2028-29
Administration costs to be absorbed by DPE	3,820	3,916	4,014	4,114	4,217	4,322	4,430	4,541	4,655	4,771	42,800

This estimate is based on Treasury's estimate of \$3.8 million per annum, comprising:

- \$0.6 million per annum for staffing
- \$1.0 million for project advisory and communications activities
- \$1.6 million for administering payments
- \$0.7 million for project evaluation activities.

Notes and costing assumptions continued:

Treasury estimated these amounts based on its review of DPE's administration costs for the existing Smart Energy for Homes and Business program, which Treasury used as a proxy for the likely administration costs for this policy.

The PBO has escalated the costs by 2.5% per annum, which is consistent with the existing Public Sector Wage Policy of 2.5% per annum that applies to DPE.

Partnership with solar PV and battery businesses

The policy proposes the NSW Government will enter into a partnership with solar PV and battery businesses in NSW to provide and install solar PV and battery works for eligible households. The partnership(s) will be selected based on a competitive tender process and the selected partners will be responsible for providing and installing solar PV and battery systems, warranties and administration of loans. The tender process will be re-run every three years to account for technological, industry and price changes in the solar PV and battery market.

The PBO assumes that the partnership(s) struck between the NSW Government and NSW solar PV and battery business(es) will successfully meet the assumed uptake of solar PV and battery systems identified above.

Furthermore, the PBO assumes that the partnership agreement(s) will not require the NSW government to directly pay solar PV and battery providers i.e. at no cost to NSW Government apart from internal resources to establish the agreement and general administration-related activities (see section earlier).

The PBO notes that the cost of installing solar PV and battery systems has been declining over recent years. The PBO considers that the 3-year term of the partnership provides some flexibility over the duration of the program for the NSW Government to realise lower solar PV and battery prices and thereby, the amount of loans disbursed and interest expenses.

Notes and costing assumptions continued:

Appendix A - Cost of policy between 2019-20 and 2037-38 (\$000s)

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	Total		
Loans disbursed																						
Battery system	50,400	100,800	126,000	157,500	189,000	220,500	252,000	284,600	284,600	284,600										1,890,000		
Solar PV and battery system	33,600	67,200	84,000	105,000	126,000	147,000	168,000	176,400	176,400	176,400											1,260,000	
Total	84,000	168,000	210,000	262,500	315,000	367,500	420,000	441,000	441,000	441,000											3,150,000	
Loan payback																						
Battery system	-5,040	-15,120	-27,720	-43,470	-62,370	-84,420	-109,620	-136,080	-162,540	-189,000	-183,960	-173,880	-161,280	-145,530	-128,630	-104,580	-79,380	-52,920	-26,460		-1,890,000	
Solar PV and battery system	-4,200	-12,600	-23,100	-36,225	-51,975	-70,350	-91,350	-113,400	-131,250	-144,900	-134,400	-121,275	-105,525	-87,150	-66,150	-44,100	-22,050	0	0		-1,260,000	
Total	-9,240	-27,720	-50,820	-79,695	-114,345	-154,770	-200,970	-249,480	-293,790	-333,900	-318,360	-295,155	-266,805	-232,680	-192,780	-148,680	-101,430	-52,920	-26,460		-3,150,000	
Cumulative loan balance																						
Battery system	45,360	131,040	229,320	343,350	469,980	606,060	748,440	876,960	979,020	1,054,620	870,660	696,780	535,500	389,970	263,340	158,760	79,380	26,460	0		8,505,000	
Solar PV and battery system	29,400	84,000	144,900	213,675	287,700	364,350	441,000	504,000	549,150	580,650	446,250	324,975	219,450	132,300	66,150	22,050	0	0	0		4,410,000	
Total	74,760	215,040	374,220	557,025	757,680	970,410	1,189,440	1,380,960	1,528,170	1,635,270	1,316,910	1,021,755	754,950	522,270	329,490	180,810	79,380	26,460	0		12,915,000	
Cost of interest																						
Battery system	2,409	6,959	12,178	18,233	24,957	32,184	39,744	46,569	51,989	56,003	46,235	37,001	28,437	20,709	13,984	8,431	4,215	1,405	0		451,641	
Solar PV and battery system	1,561	4,461	7,695	11,347	15,278	19,348	23,418	26,764	29,161	30,834	23,697	17,257	11,653	7,028	3,513	1,171	0	0	0		234,184	
Total	3,970	11,419	19,872	29,580	40,235	51,532	63,163	73,333	81,150	86,838	69,932	54,258	40,090	27,734	17,497	9,602	4,215	1,405	0		685,824	
Default expenses																						
Battery system	71	212	388	609	873	1,182	1,535	1,905	2,276	2,646	2,575	2,434	2,258	2,037	1,773	1,464	1,111	741	370		26,460	
Solar PV and battery system	25	76	139	217	312	422	548	680	788	869	806	728	633	523	397	265	132	0	0		7,560	
Total	96	287	527	826	1,185	1,604	2,083	2,586	3,063	3,515	3,382	3,162	2,891	2,560	2,170	1,729	1,244	741	370		34,020	
Administration costs to be absorbed by DPE	3,820	3,916	4,014	4,114	4,217	4,322	4,430	4,541	4,655	4,771	4,890	5,013	5,138	5,266	5,398	5,533	5,671	5,813	5,958		91,481	
Offsets from Smart Energy for Homes and Businesses program	4,066	11,707	20,399	13,320																		49,492
Total net cost	0	0	0	17,085	41,420	53,136	65,246	75,919	84,213	90,353	73,314	57,420	42,981	30,294	19,667	11,330	5,459	2,146	370		670,353	