Powerwall Transmission Degradation Example

Summary Comparison of Transmission Benefit

$000	GMP Model	Illustrative with Degradation	
		4.0 Hour Duration	2.5 Hour Duration
Oct-18	63.4	43.2	63.4
Oct-23	77.2	45.7	73.0

Powerwall Transmission Degradation Example

GMP Model of Oct-2018 Transmission Benefit

A	B	C
Physical Effectiveness	Forecast Accuracy	Communication Availability
%	%	%
99	70	90

D	E	F	G	H = A x B x C	I = D x E x F x G x H / 1000
Capacity	Units	Avoided Losses	Transmission Rate	Reduction Factor	Transmission Benefit
kW / unit	#	%	$ / kW-Mo.	%	$000
5	2000	1.089	9.33	62.37	**63.4**

GMP Model of Oct-2023 Transmission Benefit

A	B	C
Physical Effectiveness	Forecast Accuracy	Communication Availability
%	%	%
98	70	90

D	E	F	G	H = A x B x C	I = D x E x F x G x H / 1000
Capacity	Units	Avoided Losses	Transmission Rate	Reduction Factor	Transmission Benefit
kW / unit	#	%	$ / kW-Mo.	%	$000
5	2000	1.089	11.48	61.74	**77.2**

Powerwall Transmission Degradation Example

Impact of Longer Duration Dispatch in Year 1

A	B	C = B / A	D	E = C / D
Required Duration	Available Energy	Sustainable Output	Maximum Output	Revised Physical Effectiveness
Hours	*kWh*	*kW*	*kW*	*%*
4	13.5	3.38	5	67.5

Illustrative Oct-2018 Transmission Benefit

A	B	C
Physical Effectiveness	Forecast Accuracy	Communication Availability
%	*%*	*%*
67.5	70	90

D	E	F	G	H = A x B x C	I = D x E x F x G x H / 1000
Capacity	Units	Avoided Losses	Transmission Rate	Reduction Factor	Transmission Benefit
kW / unit	*#*	*%*	*$ / kW-Mo.*	*%*	*$000*
5	2000	1.089	9.33	42.53	**43.2**

Powerwall Transmission Degradation Example

Estimated Available Energy in Year 5

A	B	C	D = B x (1 - A)^D
Annual Degradation	Starting Energy	Years	Energy in Year 5
%	kWh	#	kWh
3	13.5	5	11.59

Impact of Longer Duration Dispatch in Year 5

A	B	C = B / A	D	E = C / D
Required Duration	Available Energy	Sustainable Output	Maximum Output	Revised Physical Effectiveness
Hours	kWh	kW	kW	%
4	11.59	2.90	5	57.96

Illustrative Oct-2023 Transmission Benefit

A	B	C
Physical Effectiveness	Forecast Accuracy	Communication Availability
%	%	%
57.96	70	90

D	E	F	G	H = A x B x C	I = D x E x F x G x H / 1000
Capacity	Units	Avoided Losses	Transmission Rate	Reduction Factor	Transmission Benefit
kW / unit	#	%	$ / kW-Mo.	%	$000
5	2000	1.089	11.48	36.52	**45.7**

Powerwall Transmission Degradation Example

Estimated Available Energy in Year 5

A	B	C	$D = B \times (1 - A)^D$
Annual Degradation	Starting Energy	Years	Energy in Year 5
%	kWh	#	kWh
3	13.5	5	11.59

Impact of Shorter Duration Dispatch in Year 5

A	B	C = B / A	D	E = C / D
				Revised Physical
Required Duration	Available Energy	Sustainable Output	Maximum Output	Effectiveness
Hours	kWh	kW	kW	%
2.5	11.59	4.64	5	92.74

Illustrative Oct-2023 Transmission Benefit

A	B	C
		Communication
Physical Effectiveness	Forecast Accuracy	Availability
%	%	%
92.74	70	90

D	E	F	G	H = A x B x C	I = D x E x F x G x H / 1000
Capacity	Units	Avoided Losses	Transmission Rate	Reduction Factor	Transmission Benefit
kW / unit	#	%	$ / kW-Mo.	%	$000
5	2000	1.089	11.48	58.43	**73.0**