Very local energy sharing

ARENA Measure A00833 and beyond

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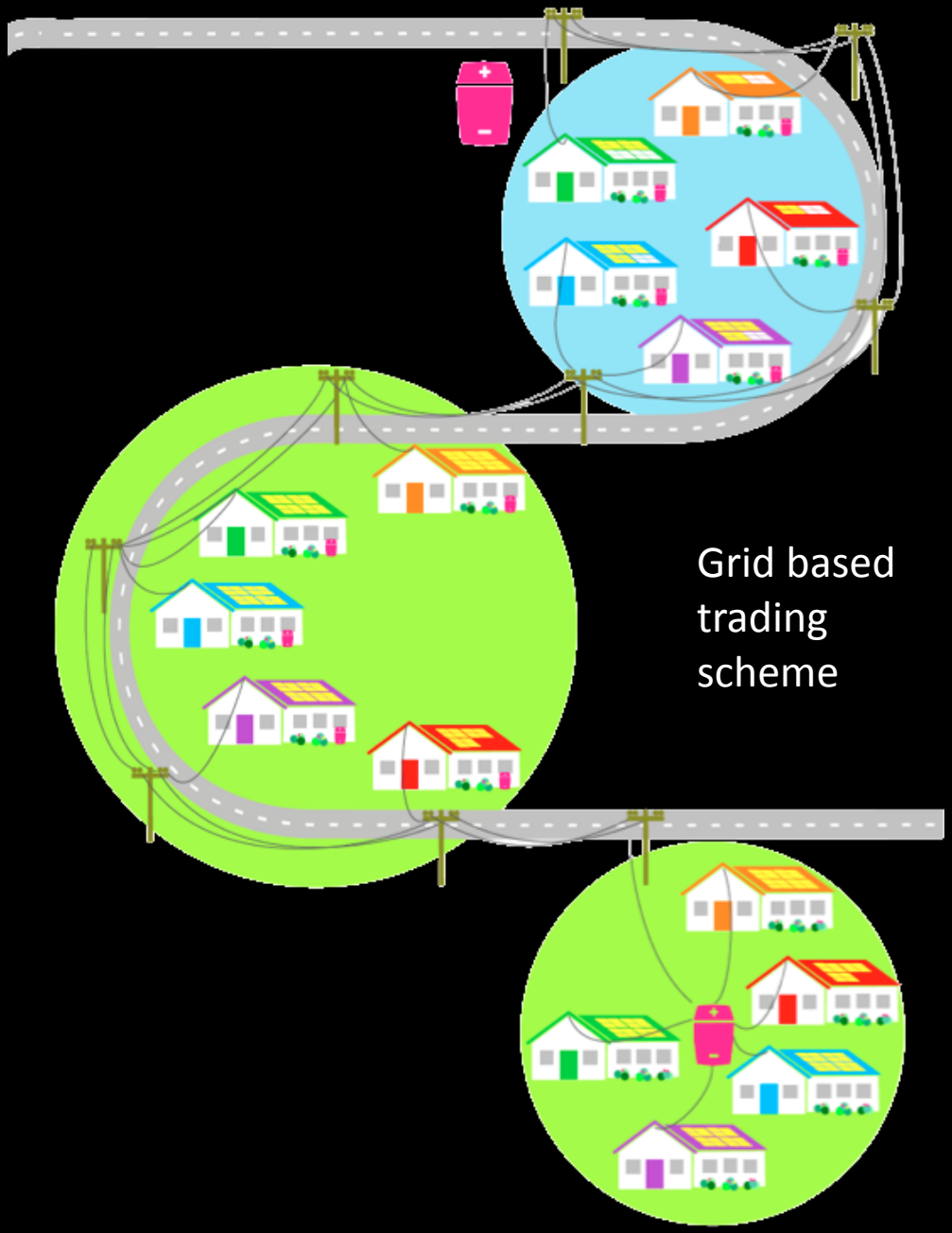
- Some problems with fed in DRE
- Why you should share DRE, now
- Merri Green “lab”
- Conclusions



Shared grid battery

Grid based trading scheme

Tied micrgrogrid

A lot of residential solar power is wasted

Subsidising fed in power is not enough

Fed in power means network upgrades

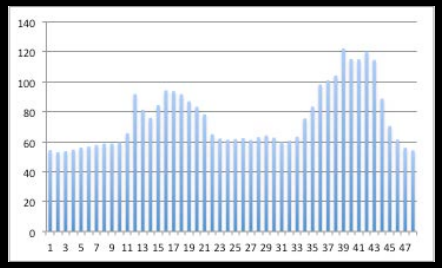
Solar homes on the public network are not diverse enough

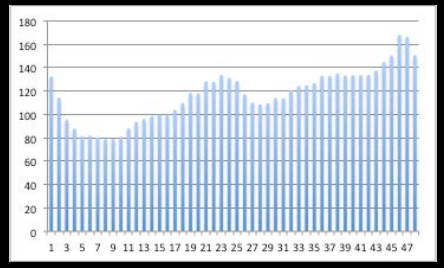
Tight and *loose* sharing

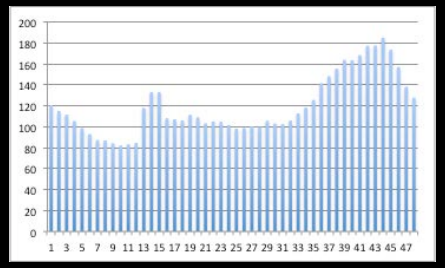
Tightly coordinated sharing of energy storage is the same utility for the less capacity

Greater diversity of consumers

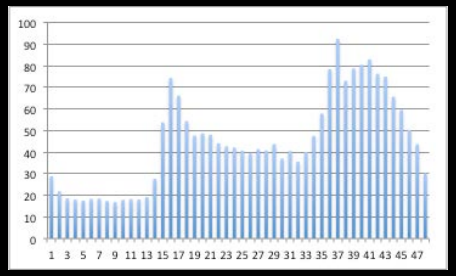
Greater energy independence for the same capacity

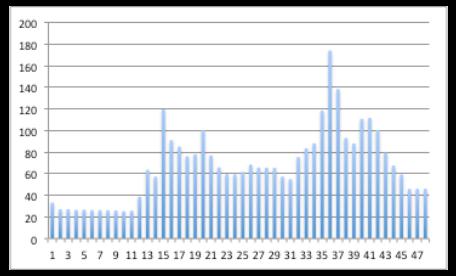




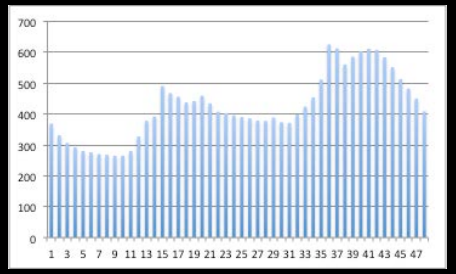


DRE System	PV:4kW Battery:4kWh					
	K3	K2	K5	K1	K4	Av/Sum
Self-consumption (%)	49.00%	65.00%	61.00%	38.00%	50.00%	52.60%
Batt utilisation (%)	81.00%	84.00%	84.00%	73.00%	82.00%	80.80%
NPV ($)	-$2,957.00	-$1,099.00	-$1,577.00	-$4,285.00	-$2,896.00	-$12,814.00
Payback (years)	30	19	20	>30	30	30



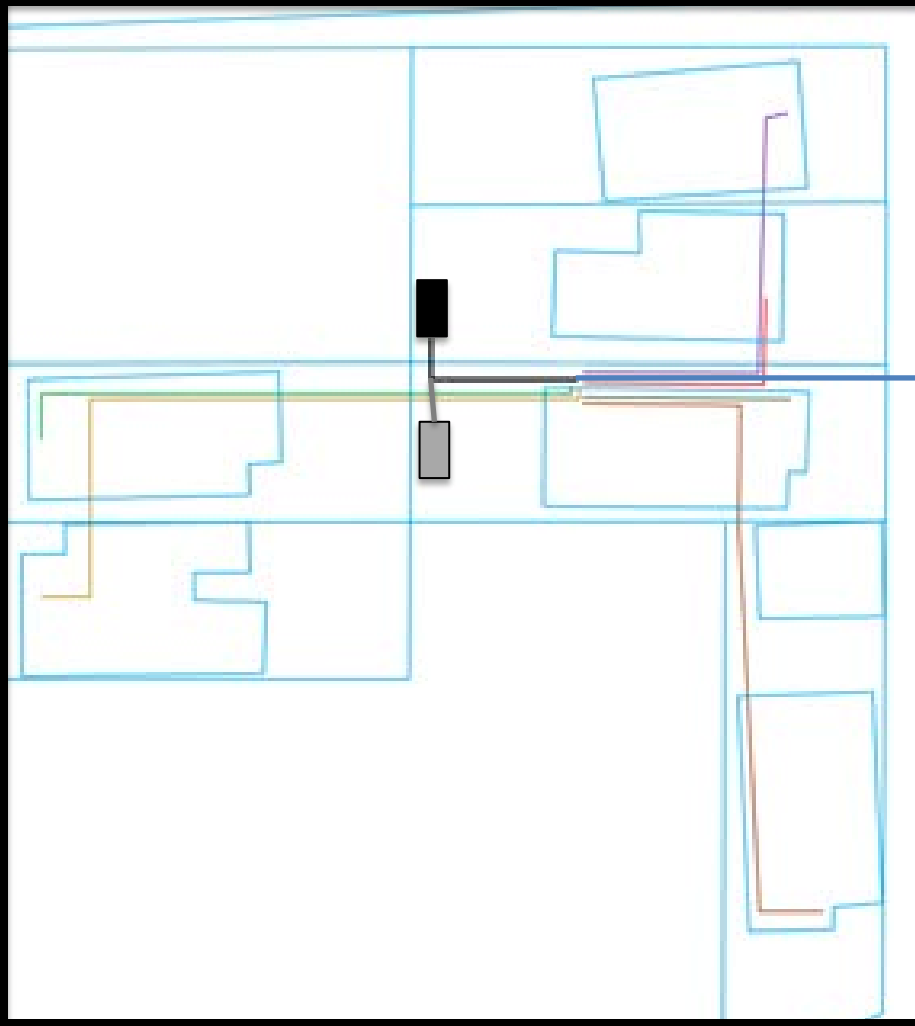


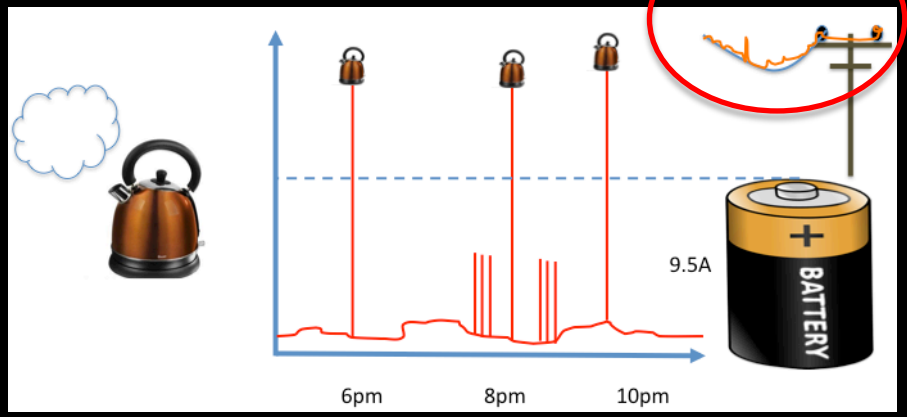
DRE System	PV:18kW Battery:12kWh
	Combined
Self-consumption (%)	94.00%
Batt utilisation (%)	91.00%
NPV ($)	$16,853.00
Payback (years)	8

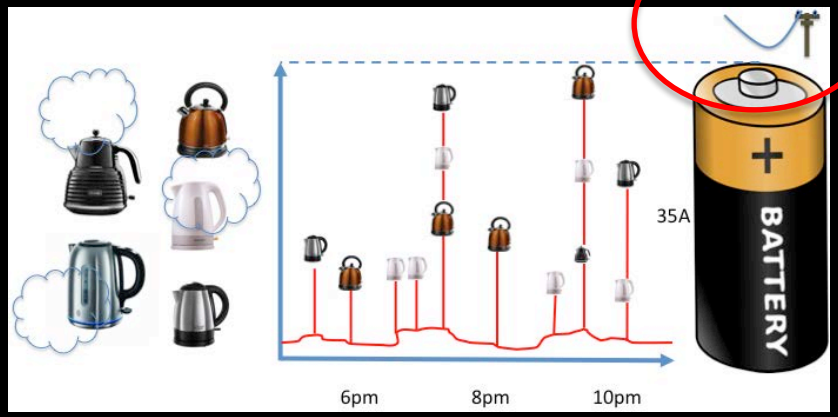


	Demand base (kWh)	Cost base ($)	Optimal PV size	Optimal battery	Maximum NPV of saving over 10 years ($)
K1	3619.2	1198.42	1.6	0	1506.8
K2	5610.9	1676.26	2.5	0	2707.8
K3	5739.8	1695.84	2.5	0	2437.65
K4	2149.6	873.44	1.1	0	812.4
K5	3233.1	1197.55	1.7	0	1486.6
Sum	20352.5	6641.51	9.4	0	8950.65
K1+ K2+ K3+ K4+ K5	20352.5	5509.170	8.3	0	9687.66

With thanks to R Khalilpour and T Vassallo




9.5A
BATTERY
6pm
8pm
10pm


35A
BATTERY
6pm
8pm
10pm

Shared generation is less energy wasted

Shared PVs is sharing roofs

Shared energy is actually sharing something

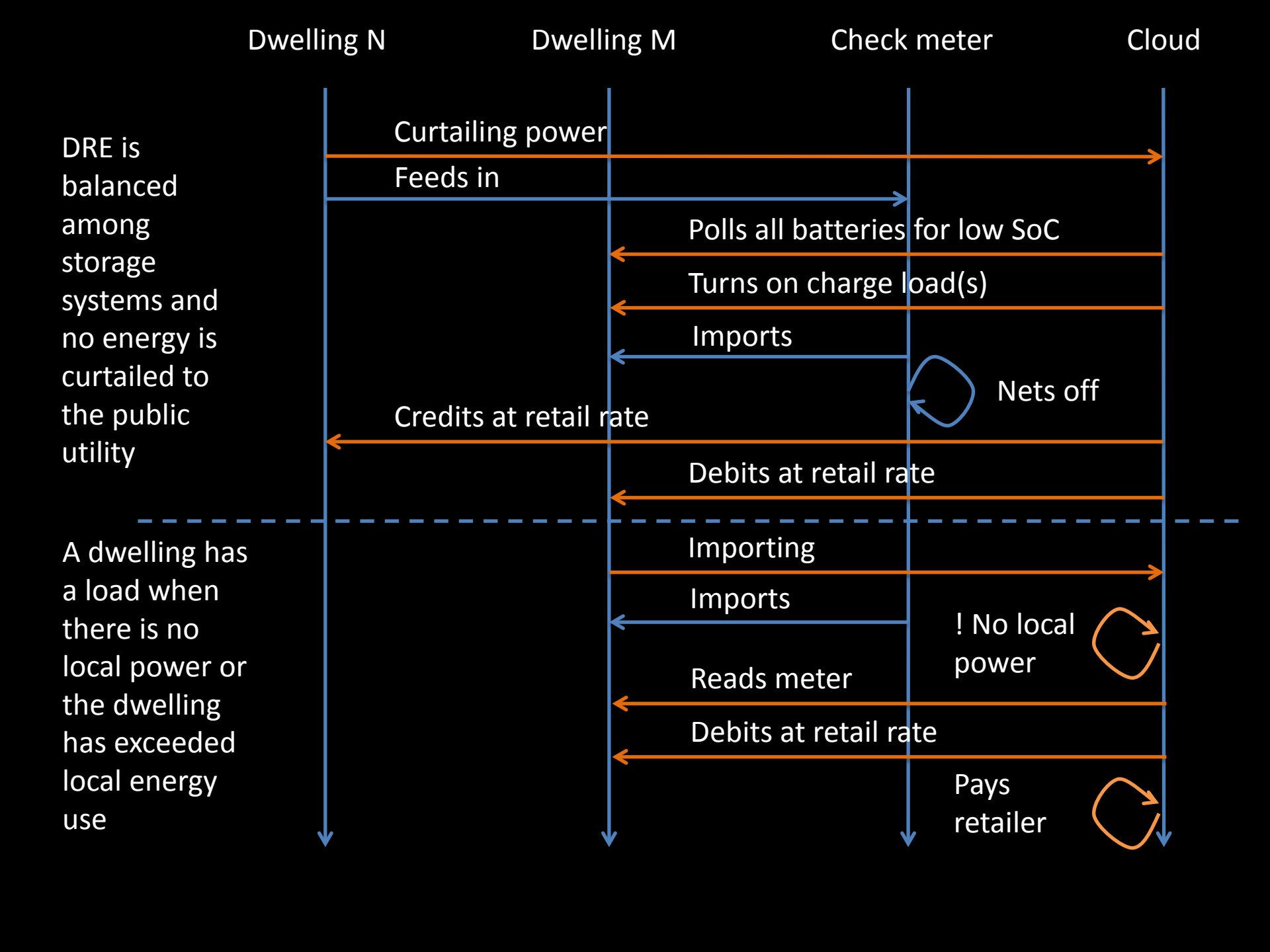

Northcote Golf Course
BLOCK 1
BLOCK 2
Beavers Road

Many separate generators / batteries

Use the embedded network to share power

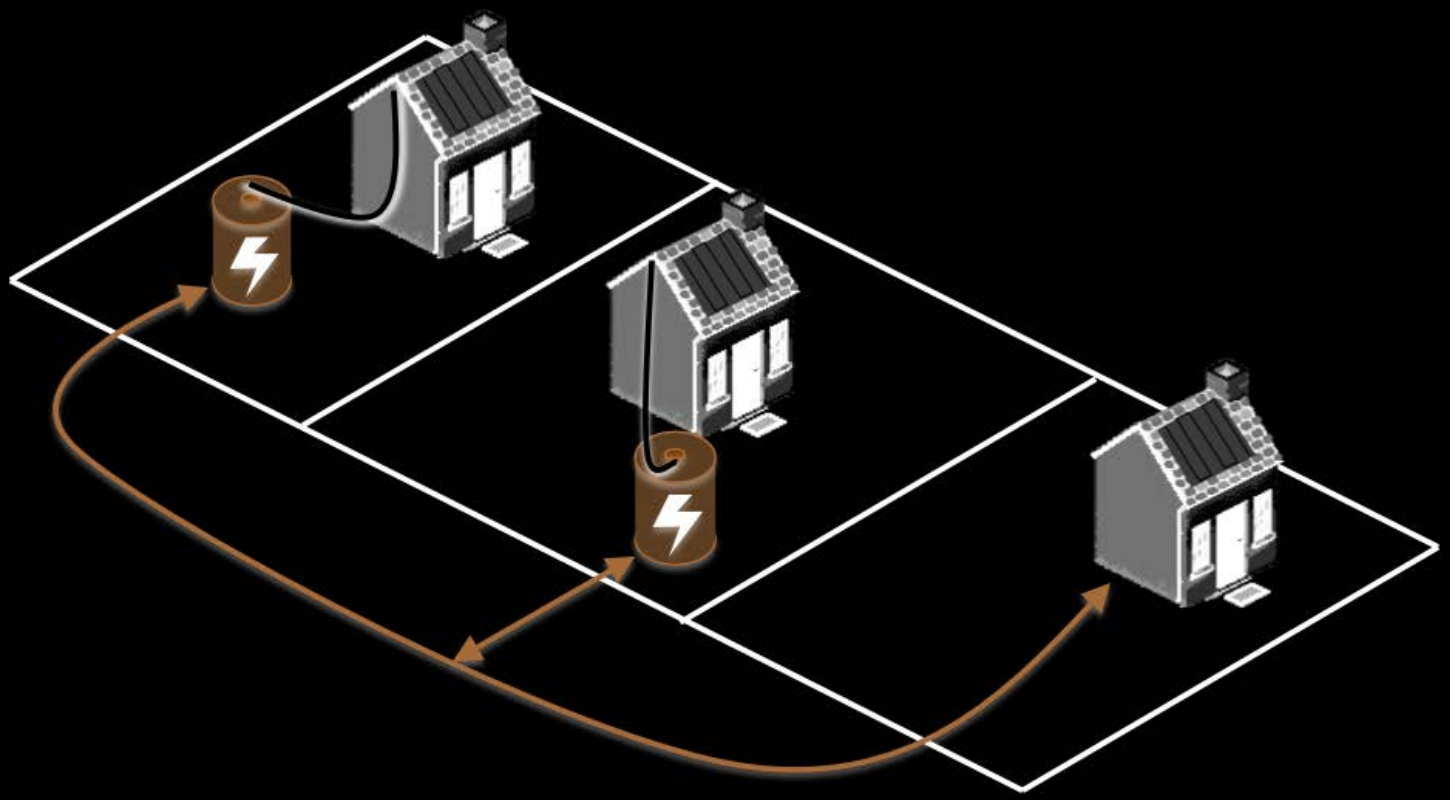
Use meters to constrain credits/debits

Simplest possible solution


Dwelling N
Dwelling M
Check meter
Cloud
DRE is balanced among storage systems and no energy is curtailed to the public utility
Curtailing power
Feeds in
Polls all batteries for low SoC
Turns on charge load(s)
Imports
Nets off
Credits at retail rate
Debits at retail rate
A dwelling has a load when there is no local power or the dwelling has exceeded local energy use
Importing
Imports
! No local power
Reads meter
Debits at retail rate
Pays retailer

Supplementary network: a backup power source

Thank you!



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