Centre for Energy and Environmental Markets

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Network Tariff Analysis for EQL's Revised TSS 2020/25

- Small business customers

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ERGON ENERGY NETWORK | energex

Part of the Energy Queensland Group

Project Overview

- Aim is to determine the customer impacts of Energy Queensland's network tariffs proposed for the 2020/25 Tariff Structure Statement [1]
- Residential and small business customers using less than 100MWh/year
- Focus on the impacts on customers of shifting from energy-based network tariffs towards tariff structures with TOU energy and kW demand charges
- Static analysis, so does not include customer response to price signals

- **Presentation outline**
  - Method
  - South East Small Business
  - Ergon East Small Business

1. The network tariffs and rates used for the Ergon Energy customer impact analysis may not reflect the network tariffs and rates used by the QCA in their Retail Price Determination process.

Method

- The UNSW Tariff Tool was used to model the impact of network tariffs on different customer loads
  - Is an open source model that can be accessed at CEEM website [1]
  - Sample load data from Frontier Economics from econometric modelling, each individual load is multiplied by its scaling factor, and so is intended to be statistically representative of customers in EQL's area.

Table 1 Number of customers with/out solar PV in the sample load data

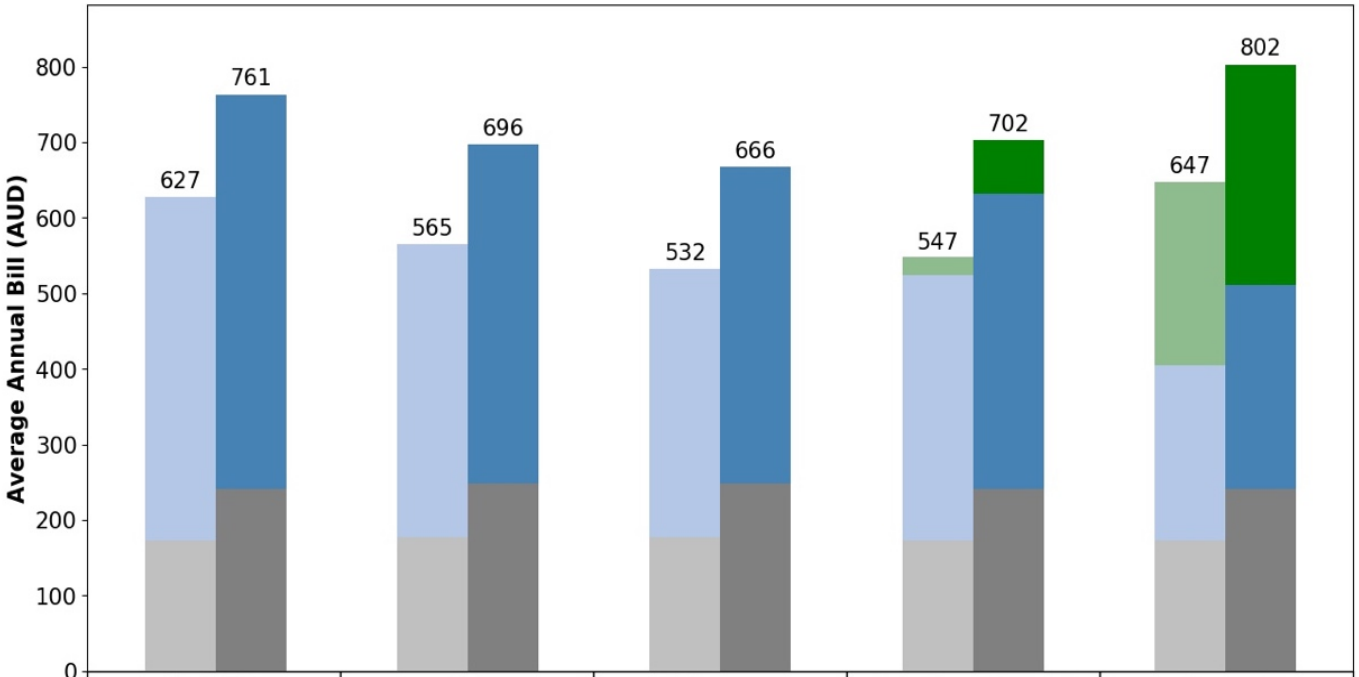
Region	Customer type	No PV	Percentage	With PV	Percentage	Total
South East	Residential	2,741	54%	2,293	46%	5,034
	Business	1,788	94%	108	6%	1,896
Ergon East	Residential	964	71%	394	29%	1,358
	Business	1,430	89%	183	11%	1,613
Ergon West	Residential	116	67%	36	24%	152
	Business	163	86%	26	14%	189
TOTALS		7,202		3,040		10,242

- Very diverse load profiles so need to split into less than 20MWh and greater than 20MWh/year

(1) http://www.ceem.unsw.edu.au/cost-reflective-tariff-design

South East Small Business <20MWh/yr, 71% – Avrg bills

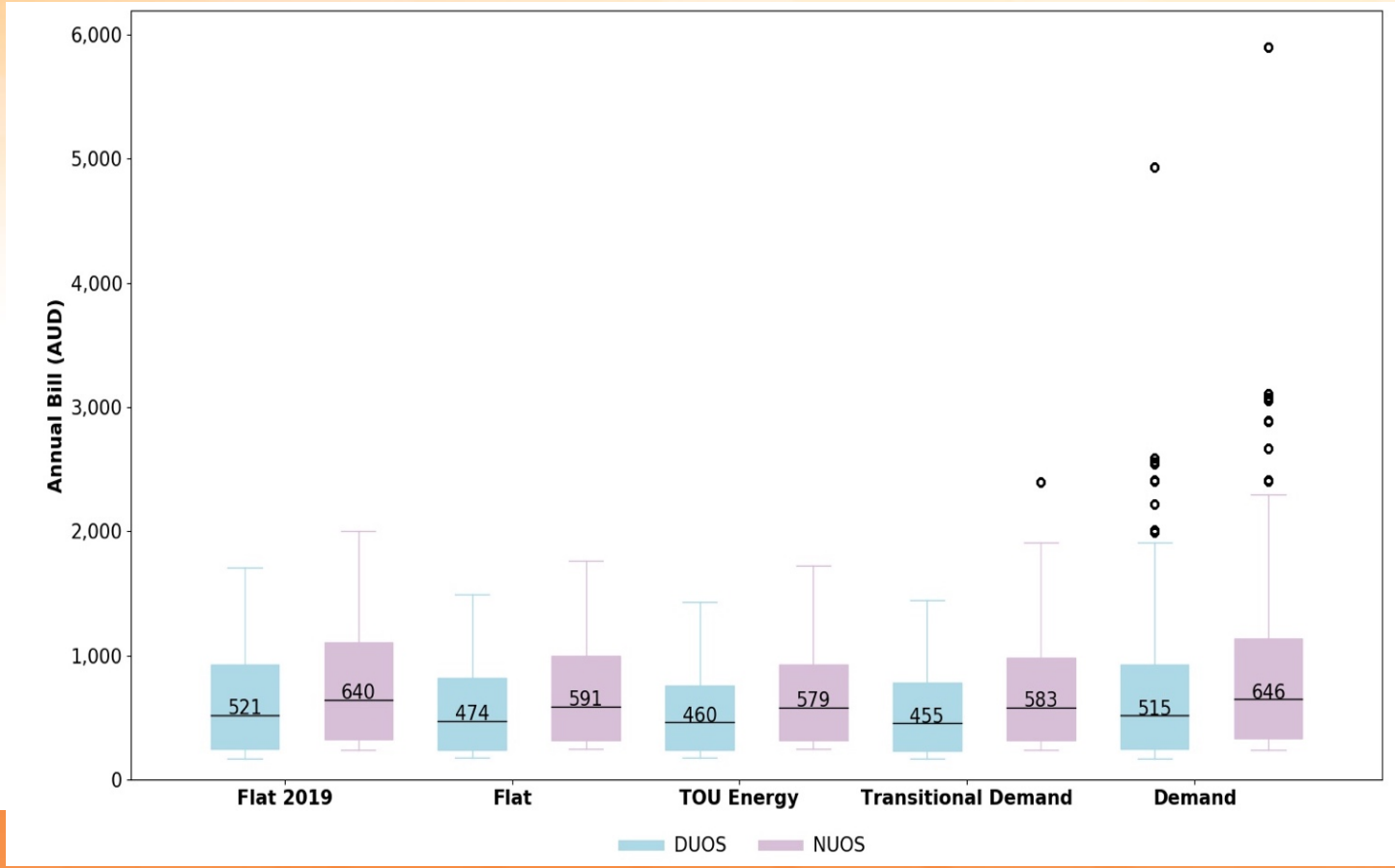
- Apart from under the Demand tariff, average and median bills under all the 2020/21 tariffs are lower than under the 2019/20 Flat tariff.
- Of the 2020/21 tariffs, the TOU Energy tariff results in the lowest average and median bills, followed by the Flat and Transitional demand tariffs.



	Flat 2019		Flat		TOU Energy		Transitional Demand		Demand	
	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS
Demand Charge	0	0	0	0	0	0	24	71	244	290
Energy Charge	455	520	388	449	356	419	350	390	231	270
Daily Charge	173	242	177	247	177	247	173	242	173	242

South East Small Business <20MWh/yr – Median bills

- Most customers are fairly tightly clustered about the median, but there is a small number of outliers under the Demand tariff – indicating they have quite peaky loads (poor load factor)
- Likely that these outliers are cross subsidised if under a Flat tariff.



South East Small Business <20MWh/yr – Tariff impacts

- Compared to the 2019/20 Flat tariff the DUOS bill decreased the most
- Compared to the Flat tariff, most customers better off under TOUE and Transitional Demand tariffs, but not the Demand tariff

Table 8. Percentage Change in Customer Median Bills Compared to the 2019/20 Tariff, 20MWh/yr or less, South East Small Business

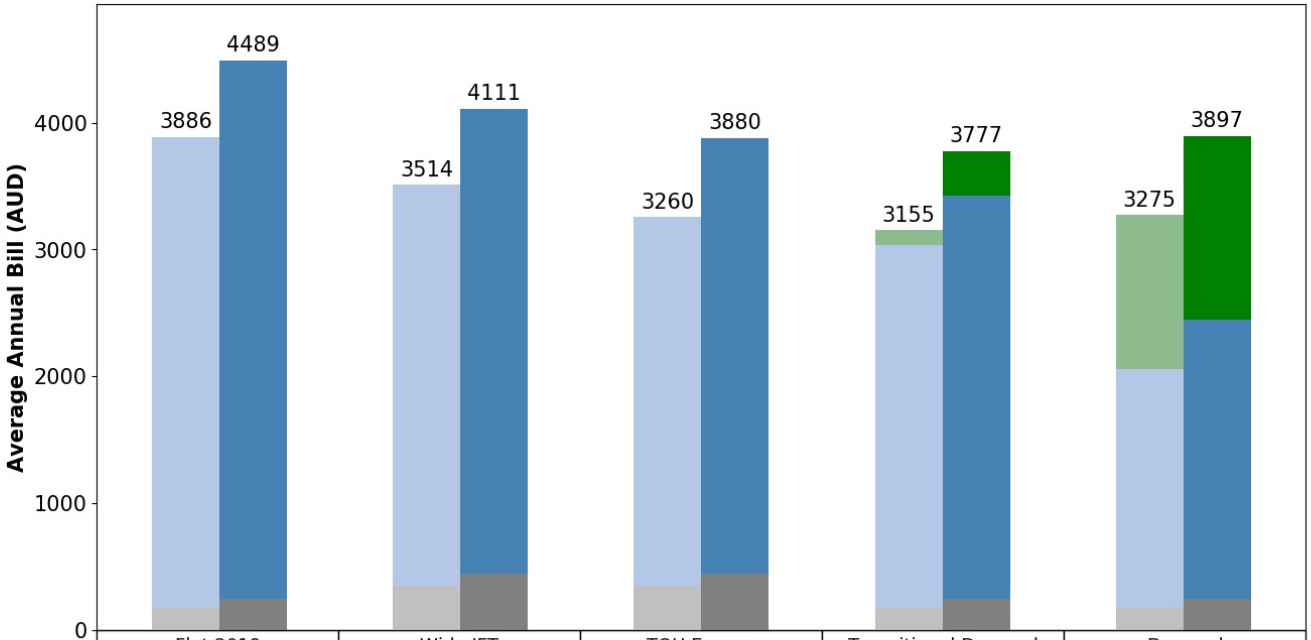
Tariff	Change	
	DUOS	NUOS
Flat	-9%	-8%
TOU Energy	-12%	-10%
Transitional Demand	-13%	-9%
Demand	-1%	1%

Table 9. Percentage of Customers Better Off and Worse Off When Moving from the Flat Tariff, 20MWh/yr or less, South East Small Business

Tariff	DUOS		NUOS	
	Better Off	Worse Off	Better Off	Worse Off
TOU Energy	74%	16%	73%	17%
Transitional Demand	91%	9%	64%	36%
Demand	43%	57%	42%	58%

South East Small Business **>20MWh/yr, 29%** – Avrg bills

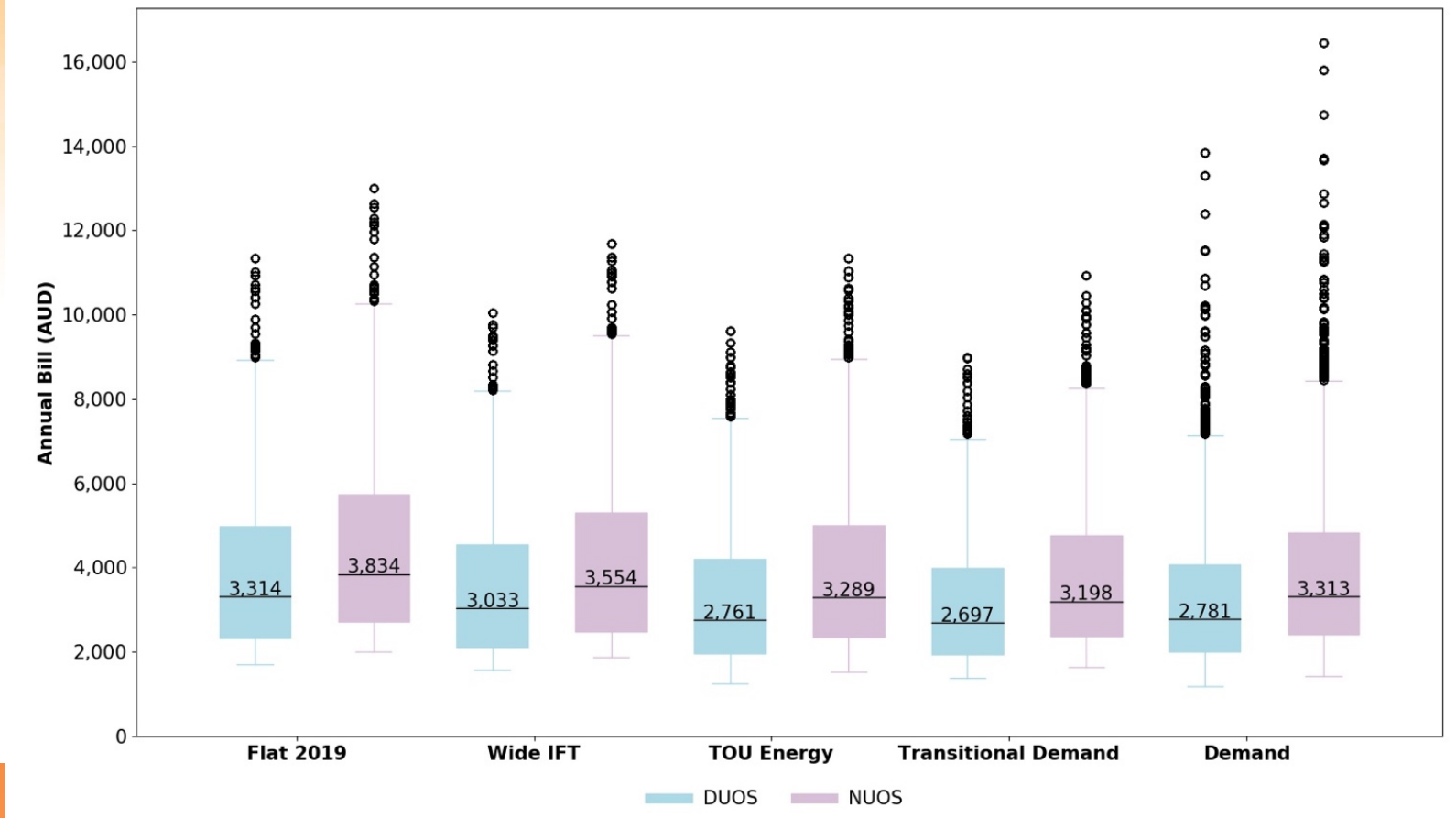
- Average and median bills under all the 2020/21 bills are lower than under the 2019/20 Flat tariff.
- Of the 2020/21 tariffs, the Transitional demand tariff results in the lowest average and median bills, followed by the TOU Energy and Demand tariffs.



	Flat 2019		Wide IFT		TOU Energy		Transitional Demand		Demand	
	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS
Demand Charge	0	0	0	0	0	0	122	355	1217	1450
Energy Charge	3714	4248	3168	3667	2914	3437	2861	3181	1886	2205
Daily Charge	173	242	347	444	347	444	173	242	173	242

South East Small Business >20MWh/yr – Median bills

- Most customers are fairly tightly clustered about the median, but there are some high outliers, especially under the Demand tariff.
- Likely that Demand tariff outliers are cross subsidised if under a Flat tariff.



South East Small Business >20MWh/yr – Tariff impacts

- Compared to the 2019/20 Flat tariff the DUOS bill decreased the most
- Compared to the Flat tariff, most customers better off under TOU Energy, Transitional Demand and Demand tariffs

Table 10. Percentage Change in Customer Median Bills Compared to the 2019/20 Tariff, More than 20MWh/yr, South East Small Business

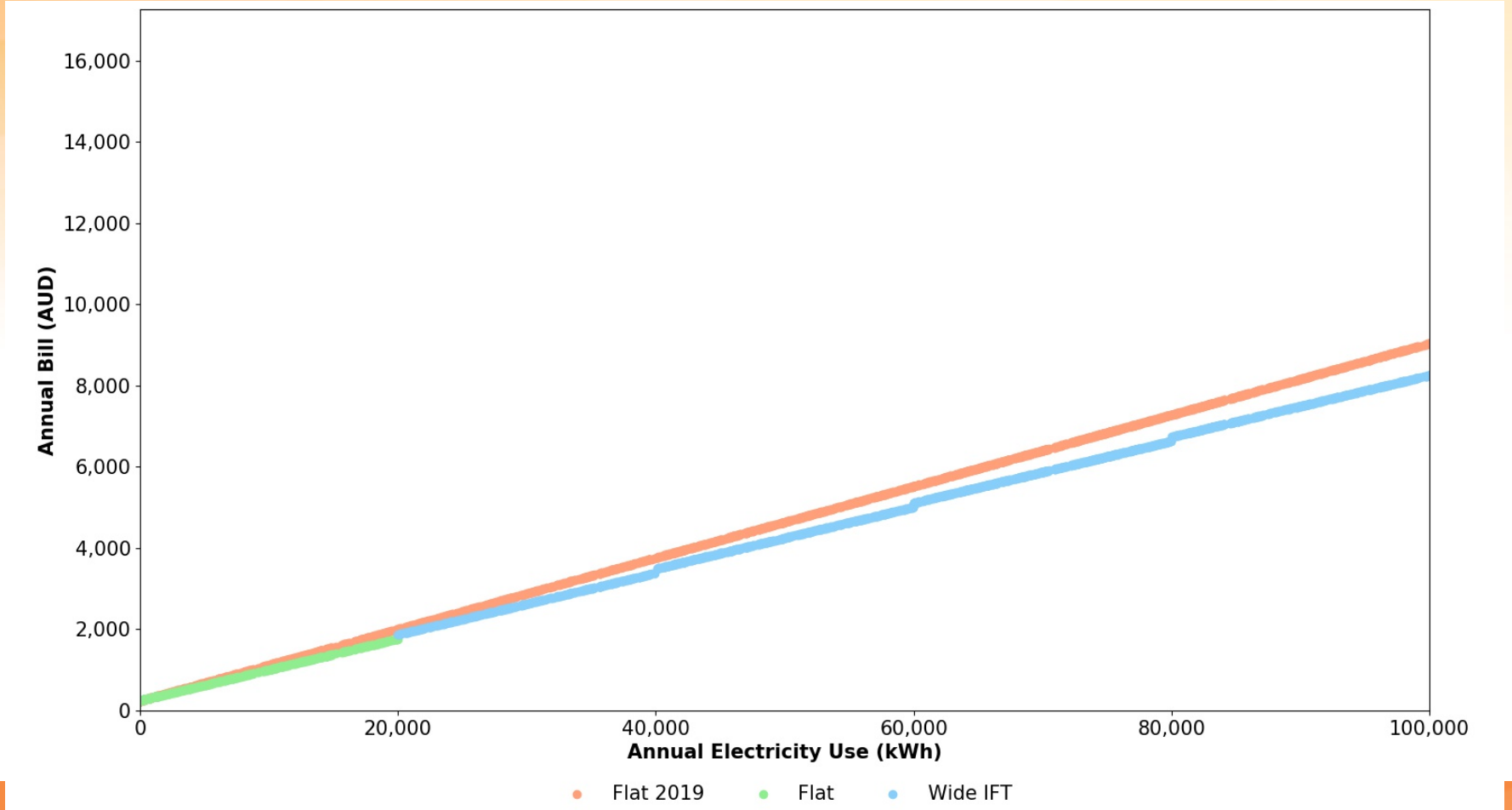
Tariff	Change	
	DUOS	NUOS
Wide IFT	-8%	-7%
TOU Energy	-17%	-14%
Transitional Demand	-19%	-17%
Demand	-16%	-14%

Table 11. Percentage of Customers Better Off and Worse Off When Moving from the Wide IFT Tariff, More than 20MWh/yr, South East Small Business

Tariff	DUOS		NUOS	
	Better Off	Worse Off	Better Off	Worse Off
TOU Energy	88%	12%	85%	15%
Transitional Demand	99%	1%	94%	6%
Demand	73%	27%	70%	30%

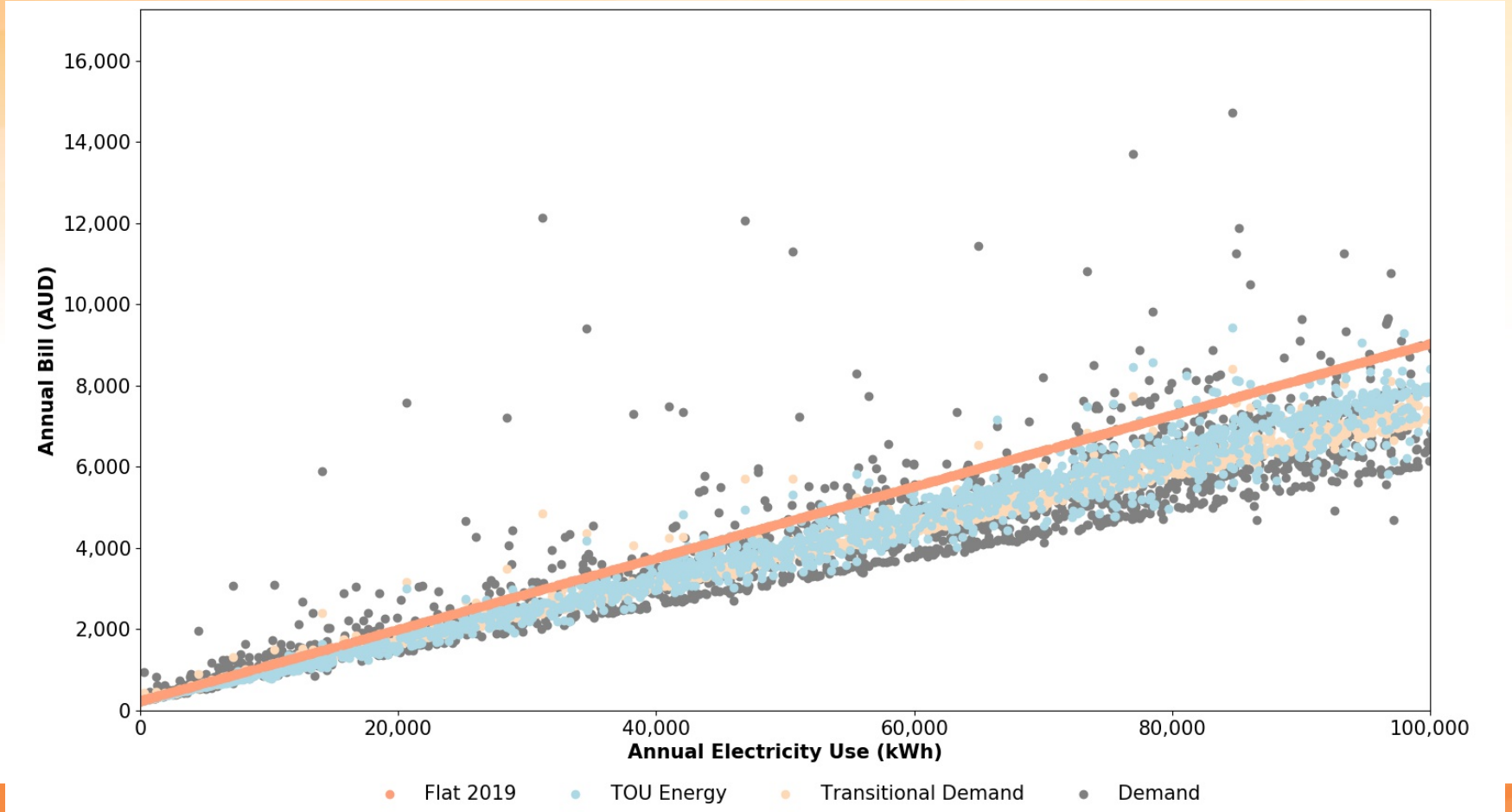
SE Small Business – NUOS compared to elec use 1

- Compared to the 2019/20 Flat tariff, the Flat and Wide IFT tariffs result in lower bills for all customers



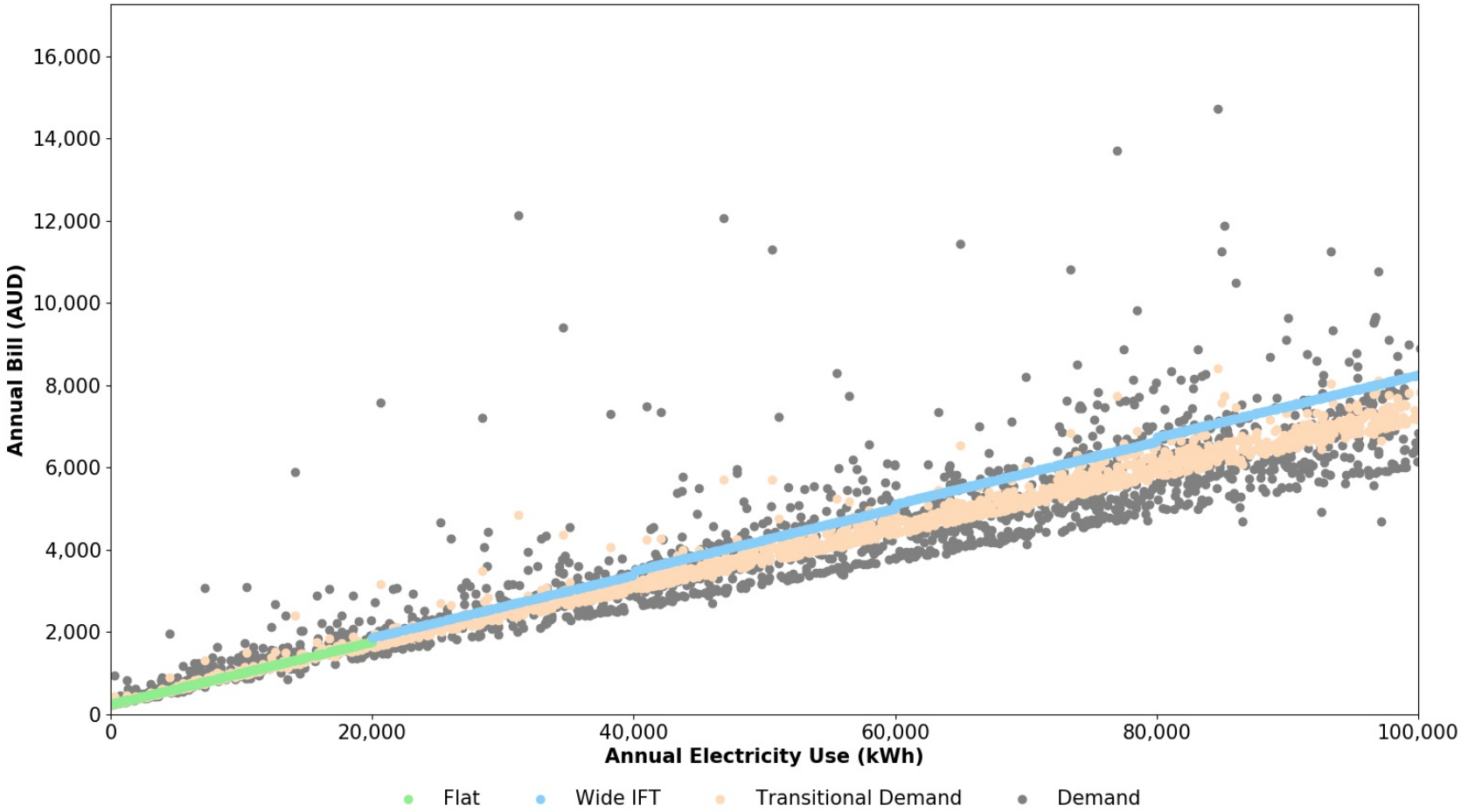
SE Small Business – NUOS compared to elec use 2

- TOU Energy, Trans Demand and Demand tariffs generally result in lower bills, although a small number of customers with poor LFs are worse off.
- Highlights the importance of managing demand peaks with these tariffs



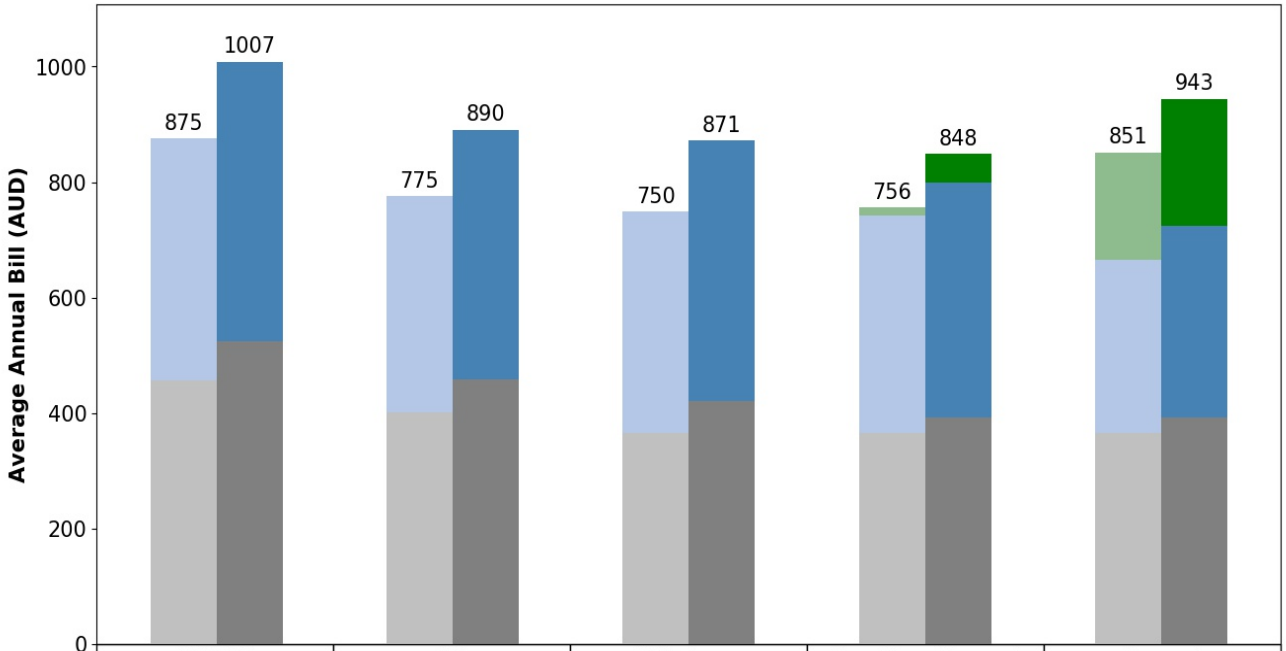
SE Small Business – NUOS compared to elec use 3

- As expected, compared to the Flat tariff, both the Transitional Demand and Demand tariffs can result in higher bills for customers with poor load factors (because Flat tariff is already lower).



Ergon East Small Business <20MWh/yr, 76% – Avrg bills

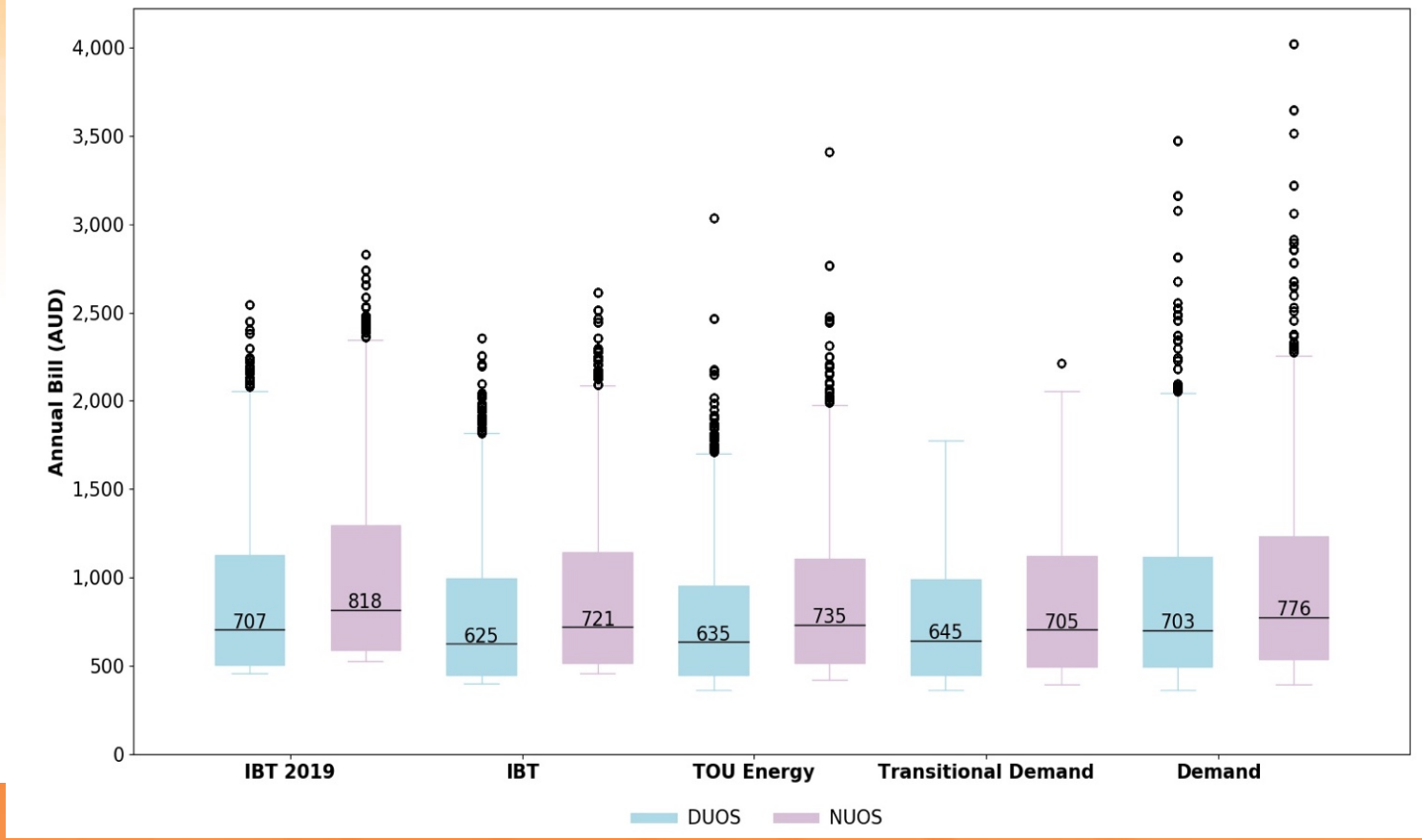
- The average and median bills under all the 2020/21 tariffs are lower than under the 2019/20 Flat tariff.
- Of the 2020/21 tariffs, the Transitional Demand tariff results in the lowest average and median bills, followed by the TOU Energy and IBT tariffs.



	IBT 2019		IBT		TOU Energy		Transitional Demand		Demand	
	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS
Demand Charge	0	0	0	0	0	0	15	49	186	220
Energy Charge	419	483	374	433	385	451	376	406	301	331
Daily Charge	456	525	402	457	365	421	365	393	365	393

Ergon East Small Business <20MWh/yr – Median bills

- Most customers are fairly tightly clustered about the median, but there are some high outliers, especially under the Demand tariff.
- Likely that Demand tariff outliers are cross subsidised if under a Flat tariff
- Transitional Demand tariff has a very small demand charge (33c vs $4)



Ergon East Small Business <20MWh/yr – Tariff impacts

- Compared to the 2019/20 IBT tariff the DUOS & NUOS decreases similar
- Compared to the IBT tariff, most customers better off under TOUE and Transitional Demand tariffs, but not the Demand tariff

Table 16. Percentage Change in Customer Median Bills Compared to the 2019/20 Tariff, Ergon East Small Business

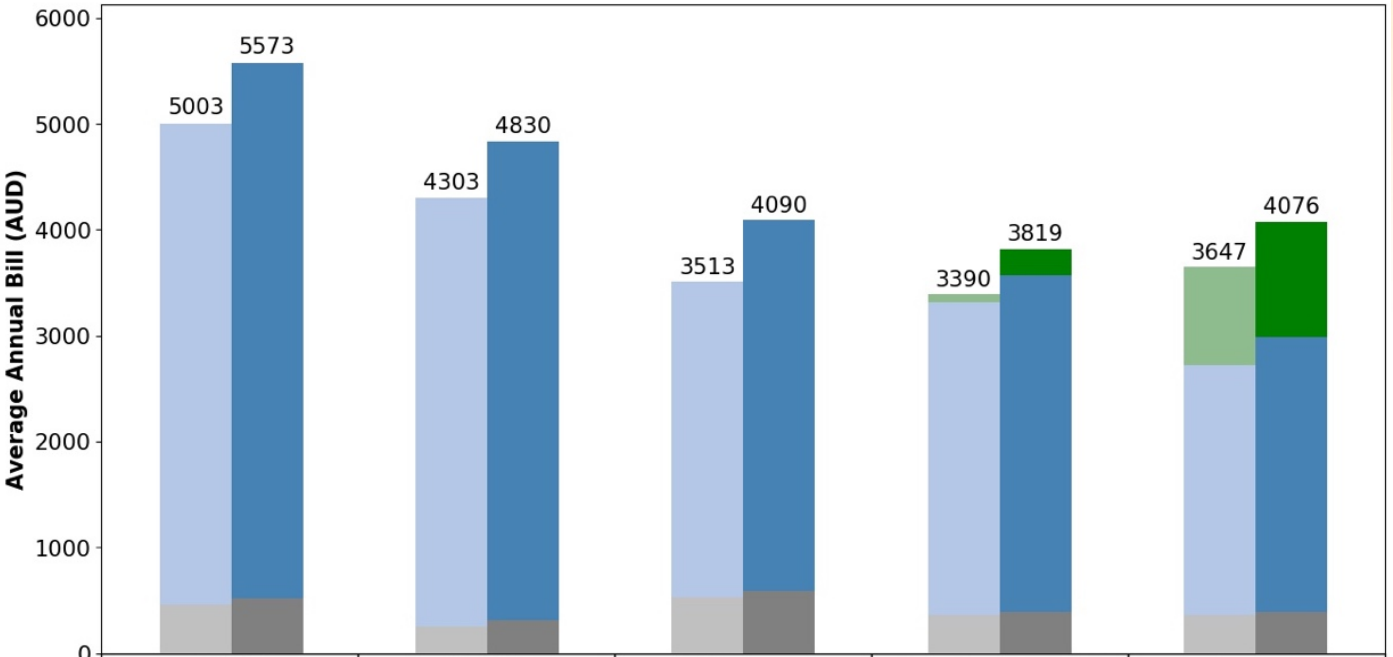
Tariff	Change	
	DUOS	NUOS
IBT	-12%	-12%
TOU Energy	-10%	-10%
Transitional Demand	-9%	-14%
Demand	-1%	-5%

Table 17. Percentage of Customers Better Off and Worse Off When Moving from the IBT Tariff, Ergon East Small Business

Tariff	DUOS		NUOS	
	Better Off	Worse Off	Better Off	Worse Off
TOU Energy	61%	39%	58%	42%
Transitional Demand	67%	33%	92%	8%
Demand	33%	67%	50%	50%

Ergon East Small Business **>20MWh/yr, 24%** – Avrg bills

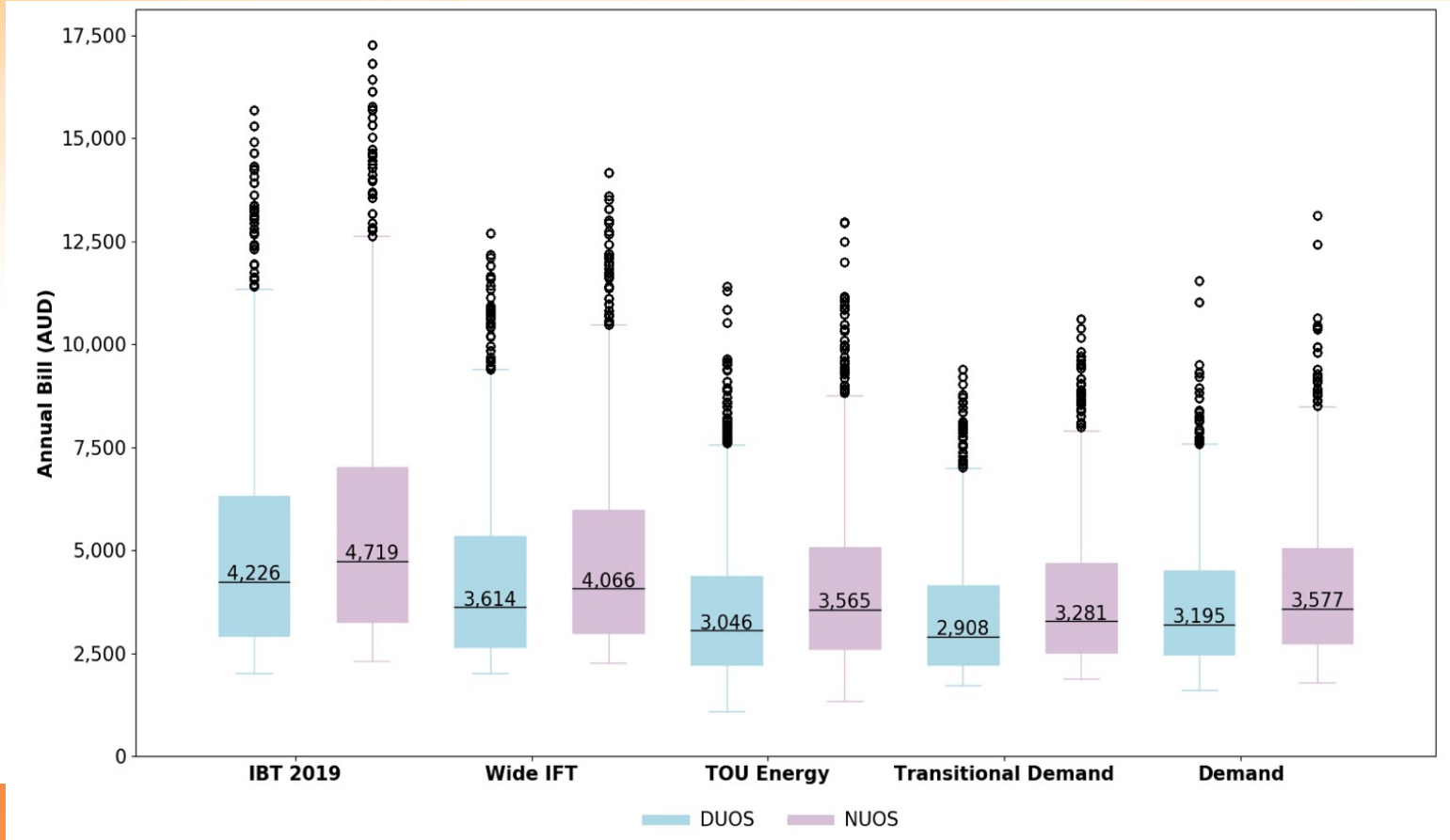
- Average and median bills under all the 2020/21 bills are lower than under the 2019/20 IBT tariff.
- Of the 2020/21 tariffs, the Transitional demand tariff results in the lowest average and median bills, followed by the TOU Energy and Demand tariffs.



	IBT 2019		Wide IFT		TOU Energy		Transitional Demand		Demand	
	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS	DUOS	NUOS
Demand Charge	0	0	0	0	0	0	77	246	923	1092
Energy Charge	4547	5049	4053	4517	2988	3503	2949	3181	2359	2591
Daily Charge	456	525	251	313	525	587	365	393	365	393

Ergon East Small Business >20MWh/yr – Median bills

- Most customers are fairly tightly clustered about the median, but there are some high outliers, especially under the 2019/20 IBT.
- Indicates that these customers have fairly good load factors.



Ergon East Small Business >20MWh/yr – Tariff impacts

- Compared to the 2019/20 IBT tariff the DUOS & NUOS decreases similar
- Compared to the IBT tariff, clear majority of customers are better off under TOU Energy, Transitional Demand and Demand tariffs

Table 18. Percentage Change in Customer Median Bills Compared to the 2019/20 Tariff, Ergon East Small Business

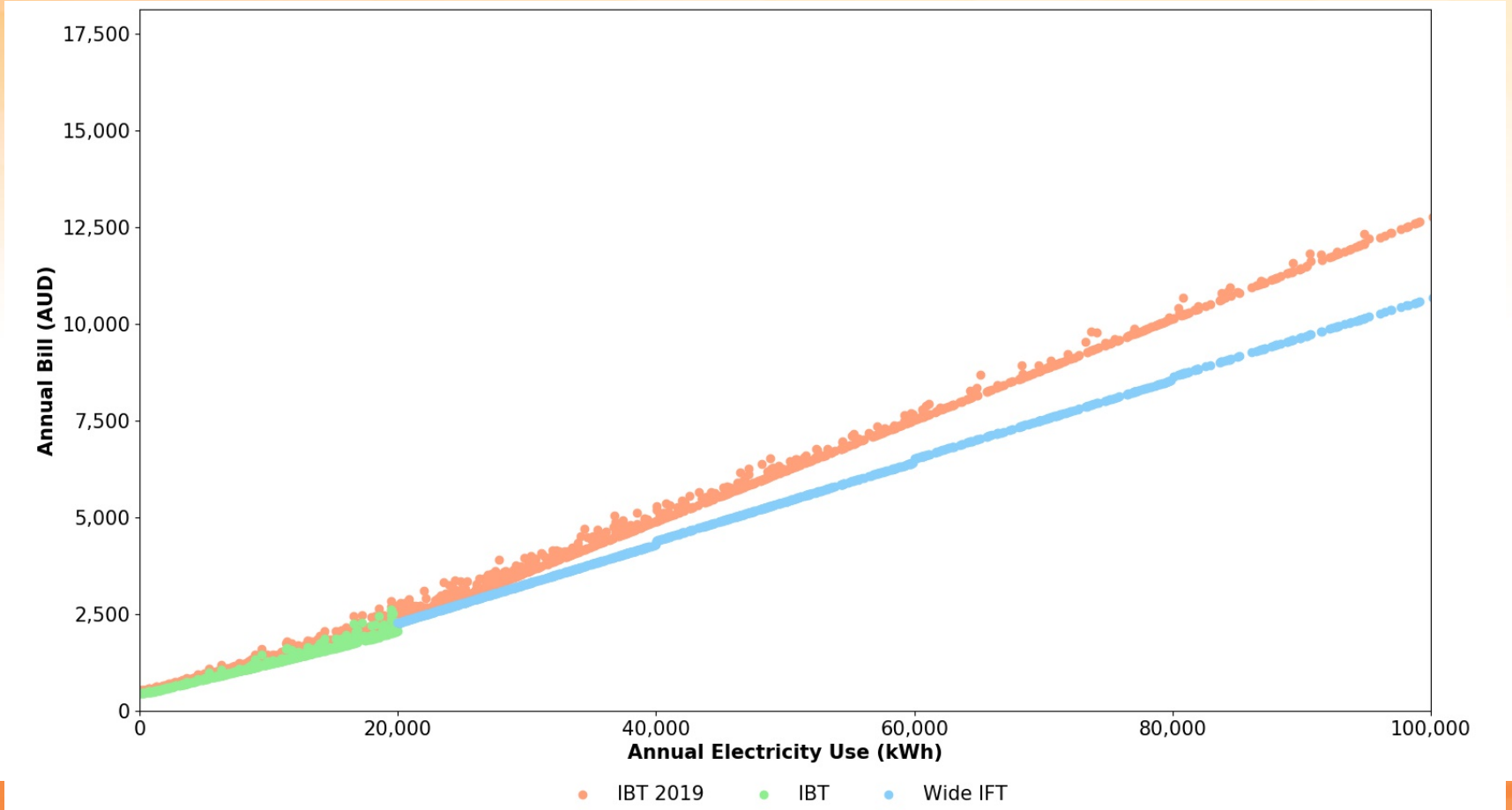
Tariff	Change	
	DUOS	NUOS
Wide IFT	-14%	-14%
TOU Energy	-28%	-24%
Transitional Demand	-31%	-30%
Demand	-24%	-24%

Table 19. Percentage of Customers Better Off and Worse Off When Moving from the Wide IFT Tariff, Ergon East Small Business

Tariff	DUOS		NUOS	
	Better Off	Worse Off	Better Off	Worse Off
TOU Energy	89%	11%	87%	13%
Transitional Demand	100%	0%	85%	15%
Demand	85%	15%	98%	2%

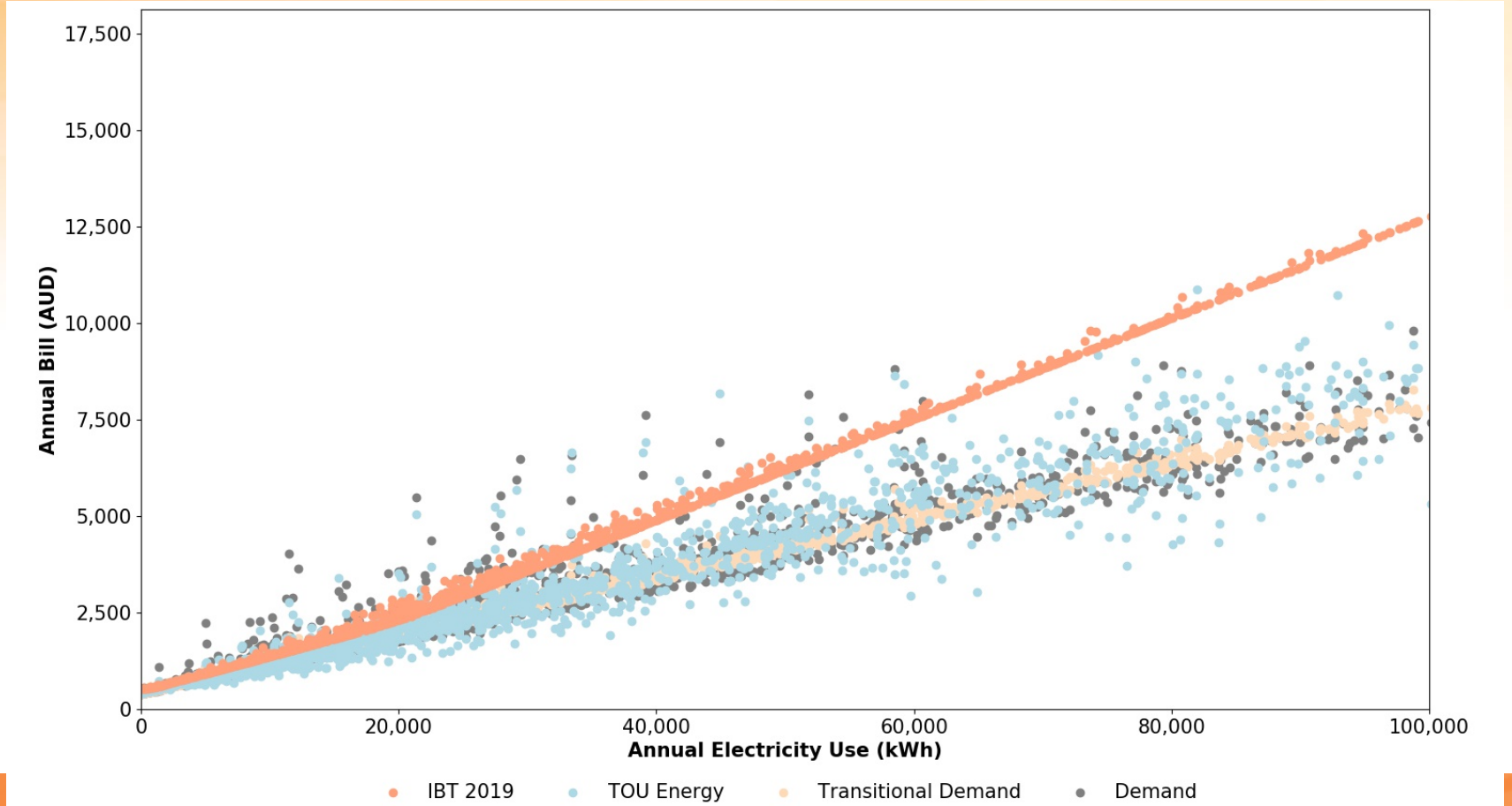
Ergon East Small Business – NUOS compared to elec use 1

- Compared to the 2019/20 IBT tariff, the IBT and Wide IFT tariffs result in lower bills for all customers



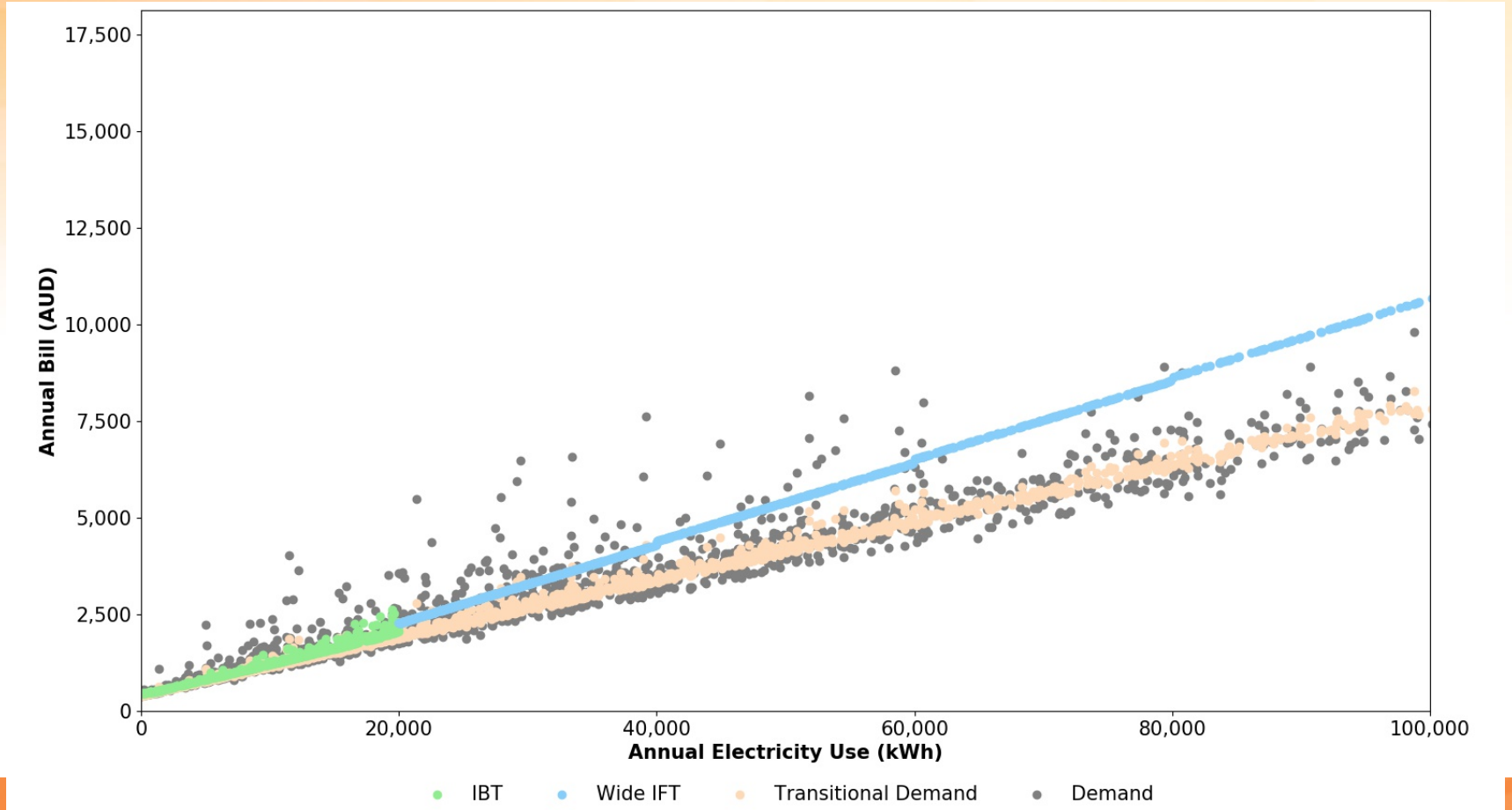
Ergon East Small Business – NUOS compared to elec use 2

- TOU Energy, Transitional Demand and Demand tariffs generally result in lower bills, although some customers with poor load factors are worse off.
- Highlights the importance of managing demand peaks with these tariffs



Ergon East Small Business – NUOS compared to elec use 3

- As expected, compared to the Flat tariff, both the Transitional Demand and Demand tariffs can result in higher bills for a small number of customers with poor load factors.



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Thank you… and *questions*

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Solar PV systems in Sample

Table 2 Size distribution of solar PV (by inverter)

Region	Customer type	Minimum (kW)	Maximum (kW)	Average (kW)	Median (kW)
South East	Residential	1	12.95	1.34	3.6
	Business	1.5	100	17.2	20
Ergon East	Residential	1	15	1.63	3.6
	Business	1.5	366	27.6	5
Ergon West	Residential	1.5	15	2.29	3.9
	Business	1.5	20	5.29	4.1