



1:30 PM - Board Discussion of 2019 GM Goals

BOARD OF DIRECTORS MEETING February 25, 2019 at **3:00 PM**

AGENDA

1. Meeting Called to Order
2. Determination of Quorum
3. Approval of Agenda
4. Member Communications
5. Approval of Consent Agenda (**Tab 2**)
 - a) Minutes from January 28, 2019
 - b) New Members
 - c) Audited Form 7 2018
 - d) January 2019 – Form 7
 - e) Statement of Operations
 - f) Cash Flow – Not completed
 - g) Capital Expenditures by Project
 - h) Power & Service Data
 - i) Outage Report
6. Committee Reports
7. Meetings Attended
 - a) PNGC Monthly Board Meeting, Portland, February 5rd – Michael and Dale
 - b) WRECA Board Meeting and Legislative Visits – Olympia, February 11-13th - David
8. Meetings to Attend

- a) PNGC Monthly Board Meeting, Portland, March 5th
– David by Conference Call
 - b) NRECA and CFC Annual Meetings, NRECA Tech
Advantage Trade Show, Orlando, Florida, March
10th- 14th - David
9. General Managers Report (Tab 3)
- a) Office Update
 - b) Operations Update
 - c) Propane Update

ITEMS OF BUSINESS

- 1) Nomination Committee Update
- 2) Results of 2018 Residential End-Use Survey
(Tab 4)
- 3) Propose Changing the May Board Meeting to
May 20th
- 4) 2019 Budget Discussion
- 5) OCEC-OCEI Relationship **(Tab 5)**

EXECUTIVE SESSION

- 1) Subsidiary Update



BOARD MEETING
January 28, 2019

Present: Curtis Edwards, Sara Carlberg, Dale Sekijima, Ray Peterson, John Kirner, Michael Murray and Alan Watson.

Attending: David Gottula; General Manager, Lynn Northcott; CFO/Office Manager, Glenn Huber; OP Manager, Tracy McCabe; OCEI Propane Manager, and Teri Parker; Office Staff.

Members in Attendance: No members attended the meeting.

PRELIMINARY

1. MEETING CALLED TO ORDER

President Curtis Edwards called the meeting of the Board of Directors of Okanogan County Electric Cooperative, Inc. (OCEC) to order at 1:00 pm.

2. DETERMINATION OF QUORUM

A quorum was present.

3. APPROVAL OF AGENDA

Agenda approved by Board Consensus.

4. MEMBER COMMUNICATION

None.

5. APPROVAL OF CONSENT AGENDA ITEMS

The Consent Agenda was approved. Sara was confused by the comment “attached herein” in the December Board minutes Item 8. Sara stated that she did not see the attachment on the website. Lynn & David informed Sara that the “attached herein” was referencing the minute book at the Cooperative where the official meeting records are kept. Lynn stated that we would remove “attached herein” from the minutes to avoid confusion.

6. COMMITTEE REPORT

Finance Committee:

Alan Watson noted the committee has met twice to review the proposed Capital Budget and is comfortable with the capital budget. The entire budget will be presented at the February Board meeting. A draft will be provided ahead of time for Board review.

Audit Committee:

There were a few small adjustments and no surprises to report. The Auditor commended staff on jobs done well and efficiency in providing audit materials.

Sara asked about cash management, her concern being OCEC cash account being held in one bank and FDIC insurance limits. She asked if the Board thought the cash account should be spread between more than one bank.

After Board discussion the consensus was to leave the account as is.

Oath of Office:

Michael Murray read the Oath of Office at this time and is officially installed as a Director.

Michael will serve on the Governance Committee until the April 2019 Board meeting at which time the committees will be restructured.

7. MEETINGS ATTENDED

- a. PNGC Monthly Board Meeting – Jan 3rd – David and Dale

A Direct Market Access Program for 10 Megawatt and greater customers was discussed and reviewed. Pros and cons to PNGC were reviewed.

- b. Christmas Party – Staff and Board - January 4th, 6:30 p.m. at Woodstone Pizzeria

8. MEETINGS TO ATTEND

- a. PNGC Monthly Board Meeting – Portland OR – Feb 5th – Dale and Michael
- b. WRECA Board Meeting and Legislative Visits – Olympia WA – Feb 11-13 – David

David noted he had a conference call this morning and WRECA is following approximately forty-bills this legislative session.

The Governor's proposed Clean Energy bill falls in line with WRECA goals, with one exception regarding an unrelated, low-income energy assistance section inserted. WRECA will work to get this section mitigated.

9. GENERAL MANAGERS REPORT

Reviewed.

a) Office Update

Lynn reported she has heard from the State of Washington FEMA confirming that OCEC will be receiving \$16,000.00. The amount has been booked as a receivable.

OCEC will be hiring an additional front office staff person due to workloads increasing.

b) Operations Update

Glenn Huber reported:

- New Lineman, Tony Faulkner, has been hired. He started on January 14th.
- Advertising for an open position for a Journeyman Lineman.
- BPA scheduled eleven (11) hour outage for April 11th is still on. The outage is needed to complete connecting OCEC to the PUD transmission line supplying redundancy for OCEC customers.
- Tree trimming projects are ongoing.

c) OCEI Propane

Tracy McCabe reported OCEI has hired Jesse Potvin to fill the open position left by a recent retirement. She will fast-track his training to prepare him for the 2019-2020 season.

OCEI staff has had a very busy winter and still has service work and projects to finish from the 2018 season.

ITEMS OF BUSINESS

1. Coordination of Messaging

David discussed the importance of having a unified message for major events or topics the cooperative may experience. The Board discussed ways of making sure the Directors communicate news or updates to the members in a unified manner that gives members the facts and does not confuse or conflict the event or topic.

The meeting was adjourned at 2:20 pm for the Presentation from Ben Kujala (NW Power and Conservation Council) and Elizabeth Osborne (WA Dept. of Commerce, Energy Department)

The Board Meeting reconvened at 3:30 pm.

2. Risk Management – Insurance Update

David reviewed OCEC's insurance status, premiums and coverage. OCEC's premium rates increased around fifty percent.

He presented a draft of OCEC's Fire Wise Program that was created to help to mitigate risks. Reviewed and discussed.

3. Nomination Committee Update

David reported there are three (3) positions open for the Board of Directors on the April Ballot. John Kirner will run as an incumbent for his position. Chris Legler has expressed his interest in running for a Board position.

Michael Murray will run as incumbent for the remaining two (2) years of the position he was appointed to.

The Nominating committee names and contact information will be published in the Cooperative newsletter in the event any other member wishes to run for a Board position.

Meeting adjourned at 3:48 pm.

EXECUTIVE SESSION

1. 2018 Management Goals
2. 2019 Management Goals
3. Litigation Update

Alan Watson, Secretary

New Members OCEC

Feb 25, 2019

REINSTATE

1.

NEW MEMBERS

- | | |
|--------------------------------------|--------|
| 1. CLAY, WILDER & DOMINGUEZ, JESSICA | 119001 |
| 2. LAMB, JUSTIN & KENDALL | 119002 |
| 3. NEVINS, CHARLES | 119003 |
| 4. PRIEST, KRISTIN | 119004 |
| 5. CARTER, THOMAS & STEKLER, JOANNE | 119005 |
| 6. SLATER, ELLEN & JARED | 119006 |
| 7. KETCHEN, AGNES & PAUL | 119007 |
| 8. WINTHROP KOA MMRW LLC | 119008 |
| 9. FERGUSON, SARAH & GRACIE, REED | 119009 |



Audited

NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION FINANCIAL AND STATISTICAL REPORT	BORROWER NAME	Okanogan County Electric Coop Inc
	BORROWER DESIGNATION	WA032
	ENDING DATE	12/31/2018

Submit one electronic copy and one signed hard copy to CFC. Round all numbers to the nearest dollar.

CERTIFICATION	BALANCE CHECK RESULTS	AUTHORIZATION CHOICES
We hereby certify that the entries in this report are in accordance with the accounts and other records of the system and reflect the status of the system to the best of our knowledge and belief.	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; background-color: red; margin: 5px; display: flex; align-items: center; justify-content: center;">8</div> <div style="margin: 5px;">Needs Attention</div> </div> <div style="margin-right: 10px;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; background-color: yellow; margin: 5px; display: flex; align-items: center; justify-content: center;">6</div> <div style="margin: 5px;">Please Review</div> </div> <div> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; background-color: green; margin: 5px; display: flex; align-items: center; justify-content: center;">4</div> <div style="margin: 5px;">Matches</div> </div> </div>	A. NRECA uses rural electric system data for legislative, regulatory and other purposes. May we provide this report from your system to NRECA?
Signature of Office Manager or Accountant Date <i>[Signature]</i> 2/21/19		<input checked="" type="radio"/> YES <input type="radio"/> NO
Signature of Manager Date <i>[Signature]</i> 2-21-19		B. Will you authorize CFC to share your data with other cooperatives?
		<input checked="" type="radio"/> YES <input type="radio"/> NO

PART A. STATEMENT OF OPERATIONS

ITEM	YEAR-TO-DATE			THIS MONTH
	LAST YEAR	THIS YEAR	BUDGET	
	(a)	(b)	(c)	
1. Operating Revenue and Patronage Capital	5,863,669	5,584,790	5,501,400	551,789
2. Power Production Expense	0	0	0	0
3. Cost of Purchased Power	2,726,275	2,707,600	2,710,581	332,298
4. Transmission Expense	0	0	0	0
5. Regional Market Operations Expense	0	0	0	0
6. Distribution Expense - Operation	68,122	88,646	69,955	7,826
7. Distribution Expense - Maintenance	538,686	551,055	574,972	50,529
8. Consumer Accounts Expense	280,954	291,181	299,885	23,772
9. Customer Service and Informational Expense	5,046	5,786	5,700	514
10. Sales Expense	1,193	7,162	0	642
11. Administrative and General Expense	734,229	554,083	675,636	15,640
12. Total Operation & Maintenance Expense (2 thru 11)	4,354,506	4,205,514	4,336,729	431,220
13. Depreciation & Amortization Expense	370,491	374,077	394,680	29,044
14. Tax Expense - Property & Gross Receipts	43,124	45,055	43,128	3,766
15. Tax Expense - Other	183,405	173,425	185,500	16,099
16. Interest on Long-Term Debt	209,411	201,713	201,772	16,258
17. Interest Charged to Construction (Credit)	0	0	0	0
18. Interest Expense - Other	0	0	0	0
19. Other Deductions	0	0	0	0
20. Total Cost of Electric Service (12 thru 19)	5,160,937	4,999,784	5,161,809	496,387
21. Patronage Capital & Operating Margins (1 minus 20)	702,732	585,006	339,591	55,402
22. Non Operating Margins - Interest	15,531	24,148	21,154	4,776
23. Allowance for Funds Used During Construction	0	0	0	0
24. Income (Loss) from Equity Investments	151,924	207,318	30,000	180,186
25. Non Operating Margins - Other	18,000	18,000	18,000	1,500
26. Generation & Transmission Capital Credits	0	0	0	0
27. Other Capital Credits & Patronage Dividends	0	0	0	0
28. Extraordinary Items	0	0	0	0
29. Patronage Capital or Margins (21 thru 28)	888,187	834,473	408,745	241,864

PART B. DATA ON TRANSMISSION AND DISTRIBUTION PLANT

ITEM	YEAR-TO-DATE		ITEM	YEAR-TO-DATE	
	LAST YEAR	THIS YEAR		LAST YEAR	THIS YEAR
	(a)	(b)		(a)	(b)
1. New Services Connected	72	56	5. Miles Transmission	0	0
2. Services Retired	8	6	6. Miles Distribution Overhead	302	303
3. Total Services In Place	3,735	3,782	7. Miles Distribution Underground	212	221
4. Idle Services (Exclude Seasonal)	105	101	8. Total Miles Energized (5+6+7)	514	524



NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION FINANCIAL AND STATISTICAL REPORT	BORROWER NAME	Okanogan County
	BORROWER DESIGNATION	WA032
	ENDING DATE	12/31/2018

PART C. BALANCE SHEET

ASSETS AND OTHER DEBITS		LIABILITIES AND OTHER CREDITS	
1. Total Utility Plant in Service	13,861,035	29. Memberships	16,205
2. Construction Work in Progress	488,850	30. Patronage Capital	7,154,745
3. Total Utility Plant (1+2)	14,349,886	31. Operating Margins - Prior Years	888,188
4. Accum. Provision for Depreciation and Amort	4,763,306	32. Operating Margins - Current Year	652,148
5. Net Utility Plant (3-4)	9,586,579	33. Non-Operating Margins	18,000
6. Nonutility Property - Net	0	34. Other Margins & Equities	645,424
7. Investment in Subsidiary Companies	827,067	35. Total Margins & Equities (29 thru 34)	9,374,709
8. Invest. in Assoc. Org. - Patronage Capital	350,874	36. Long-Term Debt CFC (Net)	0
9. Invest. in Assoc. Org. - Other - General Funds	0	37. Long-Term Debt - Other (Net)	3,241,658
10. Invest in Assoc. Org. - Other - Nongeneral Funds	146,903	38. Total Long-Term Debt (36 + 37)	3,241,658
11. Investments in Economic Development Projects	0	39. Obligations Under Capital Leases - Non current	0
12. Other Investments	13,500	40. Accumulated Operating Provisions - Asset Retirement Obligations	0
13. Special Funds	0	41. Total Other Noncurrent Liabilities (39+40)	0
14. Total Other Property & Investments (6 thru 13)	1,338,344	42. Notes Payable	0
15. Cash-General Funds	650,516	43. Accounts Payable	347,729
16. Cash-Construction Funds-Trustee	0	44. Consumers Deposits	152,805
17. Special Deposits	33,669	45. Current Maturities Long-Term Debt	125,567
18. Temporary Investments	138,460	46. Current Maturities Long-Term Debt-Economic Dev.	0
19. Notes Receivable - Net	0	47. Current Maturities Capital Leases	0
20. Accounts Receivable - Net Sales of Energy	614,995	48. Other Current & Accrued Liabilities	182,622
21. Accounts Receivable - Net Other	921,742	49. Total Current & Accrued Liabilities (42 thru 48)	808,723
22. Renewable Energy Credits	0	50. Deferred Credits	53,905
23. Materials & Supplies - Electric and Other	193,724	51. Total Liabilities & Other Credits (35+38+41+49+50)	13,478,995
24. Prepayments	0	ESTIMATED CONTRIBUTION-IN-AID-OF-CONSTRUCTION	
25. Other Current & Accrued Assets	966	Balance Beginning of Year	0
26. Total Current & Accrued Assets (15 thru 25)	2,554,072	Amounts Received This Year (Net)	493,406
27. Deferred Debits	0	TOTAL Contributions-In-Aid-Of-Construction	493,406
28. Total Assets & Other Debits (5+14+26+27)	13,478,995		

PART D. THE SPACE BELOW IS PROVIDED FOR IMPORTANT NOTES REGARDING THE FINANCIAL STATEMENT CONTAINED IN THIS REPORT.



NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION FINANCIAL AND STATISTICAL REPORT	BORROWER NAME	Okanogan County Electric Coop Inc
	BORROWER DESIGNATION	WA032
	ENDING DATE	1/31/2019

Submit one electronic copy and one signed hard copy to CFC. Round all numbers to the nearest dollar.

CERTIFICATION	BALANCE CHECK RESULTS	AUTHORIZATION CHOICES
We hereby certify that the entries in this report are in accordance with the accounts and other records of the system and reflect the status of the system to the best of our knowledge and belief.		A. NRECA uses rural electric system data for legislative, regulatory and other purposes. May we provide this report from your system to NRECA?
Signature of Office Manager or Accountant <i>[Signature]</i> Date <i>2/20/19</i>		<input checked="" type="radio"/> YES <input type="radio"/> NO
Signature of Manager <i>[Signature]</i> Date <i>2-20-19</i>		B. Will you authorize CFC to share your data with other cooperatives?
		<input checked="" type="radio"/> YES <input type="radio"/> NO

PART A. STATEMENT OF OPERATIONS

ITEM	YEAR-TO-DATE			THIS MONTH
	LAST YEAR (a)	THIS YEAR (b)	BUDGET (c)	
1. Operating Revenue and Patronage Capital	639,372	689,452	0	689,452
2. Power Production Expense	0	0	0	0
3. Cost of Purchased Power	310,626	333,400	0	333,400
4. Transmission Expense	0	0	0	0
5. Regional Market Operations Expense	0	0	0	0
6. Distribution Expense - Operation	6,080	5,944	0	5,944
7. Distribution Expense - Maintenance	70,553	89,317	0	89,317
8. Consumer Accounts Expense	26,187	23,167	0	23,167
9. Customer Service and Informational Expense	812	257	0	257
10. Sales Expense	746	(2,988)	0	(2,988)
11. Administrative and General Expense	94,617	107,620	0	107,620
12. Total Operation & Maintenance Expense (2 thru 11)	509,622	556,717	0	556,717
13. Depreciation & Amortization Expense	31,740	32,521	0	32,521
14. Tax Expense - Property & Gross Receipts	3,628	3,766	0	3,766
15. Tax Expense - Other	19,893	21,453	0	21,453
16. Interest on Long-Term Debt	18,136	16,418	0	16,418
17. Interest Charged to Construction (Credit)	0	0	0	0
18. Interest Expense - Other	0	0	0	0
19. Other Deductions	0	0	0	0
20. Total Cost of Electric Service (12 thru 19)	583,018	630,875	0	630,875
21. Patronage Capital & Operating Margins (1 minus 20)	56,354	58,577	0	58,577
22. Non Operating Margins - Interest	998	1,020	0	1,020
23. Allowance for Funds Used During Construction	0	0	0	0
24. Income (Loss) from Equity Investments	0	0	0	0
25. Non Operating Margins - Other	1,500	1,500	0	1,500
26. Generation & Transmission Capital Credits	0	0	0	0
27. Other Capital Credits & Patronage Dividends	0	0	0	0
28. Extraordinary Items	0	0	0	0
29. Patronage Capital or Margins (21 thru 28)	58,852	61,097	0	61,097

PART B. DATA ON TRANSMISSION AND DISTRIBUTION PLANT

ITEM	YEAR-TO-DATE		ITEM	YEAR-TO-DATE	
	LAST YEAR (a)	THIS YEAR (b)		LAST YEAR (a)	THIS YEAR (b)
1. New Services Connected	1	3	5. Miles Transmission	0	0
2. Services Retired	0	2	6. Miles Distribution Overhead	302	303
3. Total Services In Place	3,671	3,783	7. Miles Distribution Underground	212	221
4. Idle Services (Exclude Seasonal)	109	101	8. Total Miles Energized (5+6+7)	514	524



NATIONAL RURAL UTILITIES COOPERATIVE FINANCE CORPORATION FINANCIAL AND STATISTICAL REPORT	BORROWER NAME	Okanogan County
	BORROWER DESIGNATION	WA032
	ENDING DATE	01/31/2019

PART C. BALANCE SHEET

ASSETS AND OTHER DEBITS		LIABILITIES AND OTHER CREDITS	
1. Total Utility Plant in Service	14,082,276	29. Memberships	16,210
2. Construction Work in Progress	302,686	30. Patronage Capital	7,151,393
3. Total Utility Plant (1+2)	14,384,962	31. Operating Margins - Prior Years	1,722,660
4. Accum. Provision for Depreciation and Amort	4,794,843	32. Operating Margins - Current Year	59,597
5. Net Utility Plant (3-4)	9,590,119	33. Non-Operating Margins	1,500
6. Nonutility Property - Net	0	34. Other Margins & Equities	481,015
7. Investment in Subsidiary Companies	827,067	35. Total Margins & Equities (29 thru 34)	9,432,375
8. Invest. in Assoc. Org. - Patronage Capital	350,874	36. Long-Term Debt CFC (Net)	0
9. Invest. in Assoc. Org. - Other - General Funds	0	37. Long-Term Debt - Other (Net)	3,367,225
10. Invest in Assoc. Org. - Other - Nongeneral Funds	146,638	38. Total Long-Term Debt (36 + 37)	3,367,225
11. Investments in Economic Development Projects	0	39. Obligations Under Capital Leases - Non current	0
12. Other Investments	13,500	40. Accumulated Operating Provisions - Asset Retirement Obligations	0
13. Special Funds	0	41. Total Other Noncurrent Liabilities (39+40)	0
14. Total Other Property & Investments (6 thru 13)	1,338,080	42. Notes Payable	0
15. Cash-General Funds	671,776	43. Accounts Payable	483,355
16. Cash-Construction Funds-Trustee	0	44. Consumers Deposits	153,905
17. Special Deposits	41,531	45. Current Maturities Long-Term Debt	0
18. Temporary Investments	138,460	46. Current Maturities Long-Term Debt-Economic Dev.	0
19. Notes Receivable - Net	0	47. Current Maturities Capital Leases	0
20. Accounts Receivable - Net Sales of Energy	718,686	48. Other Current & Accrued Liabilities	234,413
21. Accounts Receivable - Net Other	913,751	49. Total Current & Accrued Liabilities (42 thru 48)	871,674
22. Renewable Energy Credits	0	50. Deferred Credits	0
23. Materials & Supplies - Electric and Other	203,393	51. Total Liabilities & Other Credits (35+38+41+49+50)	13,671,275
24. Prepayments	54,513	ESTIMATED CONTRIBUTION-IN-AID-OF-CONSTRUCTION	
25. Other Current & Accrued Assets	966	Balance Beginning of Year	0
26. Total Current & Accrued Assets (15 thru 25)	2,743,076	Amounts Received This Year (Net)	(2,742)
27. Deferred Debits	0	TOTAL Contributions-In-Aid-Of-Construction	(2,742)
28. Total Assets & Other Debits (5+14+26+27)	13,671,275		

PART D. THE SPACE BELOW IS PROVIDED FOR IMPORTANT NOTES REGARDING THE FINANCIAL STATEMENT CONTAINED IN THIS REPORT.

OKANOGAN COUNTY ELECTRIC COOPERATIVE, INC.

STATEMENT OF OPERATIONS

January 31, 2019

Draft Budget

	ANNUAL BUDGET	Y-T-D BUDGET	Y-T-D ACTUAL	MONTH BUDGET	MONTH ACTUAL
OPERATING REVENUE	\$0	\$0	\$689,452	\$697,348	\$689,452
COST OF POWER	\$0	\$0	\$333,400	\$365,694	\$333,400
GROSS MARGINS	\$0	\$0	\$356,052	\$331,654	\$356,052
OPERATING EXPENSES:					
DISTRIBUTION OPERATIONS	\$0	\$0	\$5,944	\$7,331	\$5,944
DISTRIBUTION MAINTENANCE	\$0	\$0	\$89,317	\$67,355	\$89,317
CONSUMER ACCOUNTING	\$0	\$0	\$23,167	\$25,184	\$23,167
CONSUMER SERVICE & INFO	\$0	\$0	\$257	\$1,605	\$257
SALES EXPENSE	\$0	\$0	-\$2,988	\$0	-\$2,988
ADMIN & GENERAL	\$0	\$0	\$107,620	\$107,796	\$107,620
<i>TOTAL OPERATING EXPENSES</i>	\$0	\$0	\$223,317	\$209,271	\$223,317
FIXED EXPENSES:					
DEPRECIATION	\$0	\$0	\$32,521	\$31,173	\$32,521
TAXES-PROPERTY	\$0	\$0	\$3,766	\$3,755	\$3,766
TAXES-OTHER	\$0	\$0	\$21,453	\$14,602	\$21,453
INTEREST	\$0	\$0	\$16,418	\$16,418	\$16,418
OTHER DEDUCTIONS	\$0	\$0	\$0	\$0	\$0
<i>TOTAL FIXED EXPENSES</i>	\$0	\$0	\$74,158	\$65,948	\$74,158
TOTAL EXPENSES	\$0	\$0	\$297,475	\$275,219	\$297,475
OPERATING MARGINS	\$0	\$0	\$58,577	\$56,435	\$58,577
NONOPERATING MARGINS:					
INTEREST	\$0	\$0	\$1,020	\$764	\$1,020
OTHER	\$0	\$0	\$1,500	\$1,500	\$1,500
NET MARGINS	\$0	\$0	\$61,097	\$58,699	\$61,097
T.I.E.R.	#DIV/0!	#DIV/0!	4.72	4.58	4.72

Okanogan County Electric Cooperative Inc

Capital Expenditures by Project

Jan-19

	Current Month			Year to Date			Annual	Annual
	Actual	Budget	Variance	Actual	Budget	Variance	Budget	Balance
Member Requested Facilities	0.00	0.00	0.00	0.00	0.00	0.00	288,855.00	288,855.00
Replacements (Poles & Transformers)	4,339.15	5,174.00	834.85	4,339.15	5,174.00	834.85	65,925.00	61,585.85
Misc URD/OH Replacement Projects	0.00	0.00	0.00	0.00	0.00	0.00	72,685.00	72,685.00
Replace 2500' of URD at Stud Horse - Part 2	0.00	0.00	0.00	0.00	0.00	0.00	56,609.00	56,609.00
Replace 2500' of URD at Edelweiss - Part 2	0.00	0.00	0.00	0.00	0.00	0.00	123,217.00	123,217.00
Mazama Upgrade (first of multiple phases)	0.00	0.00	0.00	0.00	0.00	0.00	51,897.00	51,897.00
Complete URD loop at Sky Ranch	0.00	0.00	0.00	0.00	0.00	0.00	37,739.00	37,739.00
Cordination Study - Part 1 of 2	0.00	0.00	0.00	0.00	0.00	0.00	15,000.00	15,000.00
Major Storm Damage	0.00	0.00	0.00	0.00	0.00	0.00	16,264.00	16,264.00
Raise level of Garage Door to match others	0.00	0.00	0.00	0.00	0.00	0.00	10,000.00	10,000.00
Pole Inspections	0.00	0.00	0.00	0.00	0.00	0.00	10,000.00	10,000.00
Fire Retardant/Treatment on Poles	0.00	0.00	0.00	0.00	0.00	0.00	20,739.00	20,739.00
Meter Projects (replace CTs)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchase Pole Tamper and other tools	0.00	0.00	0.00	0.00	0.00	0.00	18,000.00	18,000.00
Purchase Phase Tracker	0.00	0.00	0.00	0.00	0.00	0.00	6,000.00	6,000.00
Roof Extension on Back Walkway	0.00	0.00	0.00	0.00	0.00	0.00	10,000.00	10,000.00
subtotal	4,339.15	5,174.00	834.85	4,339.15	5,174.00	834.85	802,930.00	798,590.85
Un Allocated Overhead	19,622.82			19,622.82		(19,622.82)		
Member CIAC	CIAC	(1,650.00)	4,392.40	*	(1,650.00)	4,392.40	(340,000.00)	(342,742.40)
Total less CIAC	26,704.37			26,704.37			462,930.00	
							* \$38,255.93 holding in CIAC 1/31/19	
Meters Purchases	0.00	0.00	0.00	0.00	0.00	0.00	35,000.00	35,000.00
Computers & Software Upgrades	0.00	0.00	0.00	0.00	0.00	0.00	18,000.00	18,000.00
Transformers Purchases	0.00	0.00	0.00	0.00	0.00	0.00	130,000.00	130,000.00
FEMA Reimbursement	0.00	0.00	0.00	0.00	0.00	0.00	(174,000.00)	(174,000.00)
Vehicle Replacement	0.00	0.00	0.00	0.00	0.00	0.00	220,000.00	220,000.00
Total	7,081.55	3,524.00		7,081.55	3,524.00		229,000.00	229,000.00
							Total Capital Budget less CIAC	
							691,930.00	684,848.45

* Note

	Line Crew Direct Labor	Materials	107.25 Labor	Consultants Contractors	Transportation	Benefits	Total
January	1,196.50	60.00	1,200.00	0.00	775.28	1,107.37	4,339.15
February							0.00
March							0.00
April							0.00
May							0.00
June							0.00
July							0.00
August							0.00
September							0.00
October							0.00
November							0.00
December							0.00
	1,196.50	60.00	1,200.00	0.00	775.28	1,107.37	4,339.15

* Note: 107.25 is Capitalized Labor that includes: cost estimates, line staking, development & research for construction projects that no work order has been established. Along with Stores account 163.00 material stocking.

OKANOGAN COUNTY ELECTRIC COOPERATIVE, INC.

POWER & SERVICE DATA
January-19

	October 2018	November 2018	December 2018	January 2019	January 2018
POWER DATA:					
COST OF POWER	\$184,784	\$172,451	\$332,298	\$333,400	\$310,626
KWH PURCHASED	4,367,480	6,025,725	8,389,405	8,465,310	7,789,025
KWH SOLD & OCEC USE	4,022,143	5,625,132	7,862,788	7,943,835	7,308,362
KWH LOST	345,337	400,593	526,617	521,475	480,663
LINE LOSS %	7.91%	6.65%	6.28%	6.16%	6.17%
COST PER KWH	\$0.0423	\$0.0286	\$0.0396	\$0.0394	\$0.0399
BILLING DATA:					
ACCOUNTS BILLED	3,780	3,588	3,586	3,588	3,539
AVG. KWH/CONSUMER	1,064	1,568	2,193	2,214	2,065
BILLING REVENUE	\$416,350	\$527,697	\$548,801	\$687,138	\$636,810
AVERAGE BILL	\$110.15	\$147.07	\$153.04	\$191.51	\$179.94
REVENUE/KWH SOLD	\$0.1035	\$0.0938	\$0.0698	\$0.0865	\$0.0871
SERVICE DATA:					
NEW	15	2	2	3	0
RETIRED	1	0	1	2	2
TOTAL END OF MONTH	3779	3781	3782	3783	3733
IDLE SERVICES	102	101	101	101	106
TRANSPORTATION:					
TOTAL MILES	7,820	5,446	4,800	5,497	3,807
COST OF OPERATION	\$16,599	\$19,680	\$15,969	\$18,359	\$20,390
AVG. COST PER MILE	\$2.123	\$3.614	\$3.327	\$3.340	\$5.356
MATERIALS:					
ISSUES	\$23,484	\$10,407	\$129,974	\$16,224	\$466
INVENTORY	\$303,023	\$306,812	\$193,724	\$203,393	\$248,459

OCEC 2019 Outage
Summary

Substation	Power Supply Int.	Major	Planned Int.	All Other Int.	Feeder Total Hours Out	% of Total	Total # of Meters	# of Meters w/ outage	SAIDI	SAIFI	CAIDI
Winthrop Substation (1)	-	-	-	9	9	85.0%	2958	3	0.003	0.001	2.833
Feeder 1 = Chewuch	-	-	-	8	8	75.0%	590	2	0.013	0.003	3.750
Feeder 2 = Mazama	-	-	-	-	-	0.0%	941	0	0.000	0.000	#DIV/0!
Feeder 3 = Sun Mtn	-	-	-	-	-	0.0%	746	0	0.000	0.000	#DIV/0!
Feeder 4 = Winthrop	-	-	-	1	1	10.0%	681	1	0.001	0.001	1.000
Twisp Substation (2)	-	-	-	2	2	15.0%	614	1	0.002	0.002	1.500
Feeder 1 = Airport	-	-	-	-	-	0.0%	28	0	0.000	0.000	#DIV/0!
Feeder 2 = Loup	-	-	-	-	-	0.0%	194	0	0.000	0.000	#DIV/0!
Feeder 3 = Twisp	-	-	-	2	2	15.0%	392	1	0.004	0.003	1.500
Totals					10		3572	4	0.003	0.001	2.50
CFC Summary	-	-	-	0.17							

SAIDI = Defined as sum of customer interruption durations divided by the total # of customers served
SAIFI = Defined as total number of customers interrupted divided by the total numbers of customers served
CAIDI = Defined as the average amount of time that a customer is without power for a typical interruption
ASAI = Total minutes during reported time frame divided by total minutes power was available

NUMBER OF OUTAGES = 52

Interruption: a loss of electricity for any period longer than 5 minutes
Power supply interruption: any interruption originating from the transmission system, sub-transmission system, or the substation regardless of ownership
Planned interruption: any interruption scheduled by the distribution system to safely perform routine maintenance
All other interruptions: all excluding power supply, major event, and those that are planned

Major Event: an interruption or group of interruptions caused by conditions that exceed the design & operational limits of a system. (IEEE 1366-2003 / RUS 1730a - Exhibit E).

OCEC 2019 Outage
Summary By Cause

SUMMARY BY CAUSE														
POWER SUPPLY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	
LARGE SCALE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OK PUD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEC SUB	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PLANNED														TOTAL
CONSTRUCTION	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAINTENANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER PLANNED	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EQUIPMENT OR INSTALLATION DESIGN														TOTAL
MATERIAL OR EQUIP FAILURE	4	1	-	-	-	-	-	-	-	-	-	-	-	5
INSTALLATION FAULT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CONDUCTOR SAG OR INADEGUATE CLEARANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OVERLOAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MISCOORDINATION OF PROTECTION DEVICES	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER EQUIPMENT INSTALLATION / DESIGN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAINTENANCE														TOTAL
DECAY / AGE OF MATERIAL / EQUIP	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CORROSION / ABRASION OR MATERIAL / EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TREE GROWTH	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TREE FAILURE FROM OVERHAND OR DEAD TREE WITHOUT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TREES WITH ICE / SNOW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CONTAMINATION (LEAKING / EXTERNAL)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCEC CREW CUTS TREE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAINTENANCE, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEATHER														TOTAL
LIGHTNING	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WIND NOT TREE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ICE, SLEET, FROST, NOT TREE	-	6	-	-	-	-	-	-	-	-	-	-	-	6
FLOOD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WEATHER OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANIMALS														TOTAL
SMALL ANIMAL / BIRD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LARGE ANIMAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANIMAL DAMAGE - GNAW OR BORE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ANIMAL , OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-

OCEC 2019 Outage
Summary By Cause

SUMMARY BY CAUSE														
PUBLIC													TOTAL	
CUSTOMER CAUSED	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOTOR VEHICLE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AIRCRAFT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FIRE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PUBLIC CUTS TREE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VANDALISM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SWITCHING ERROR OR CAUSED BY CONSTRUCTION / MAINTENANCE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PUBLIC, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OTHER													TOTAL	
OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UNKNOWN													TOTAL	
CAUSE UNKNOWN	-	-	-	-	-	-	-	-	-	-	-	-	-	-

****Cause listing shows total number of HOURS for all members out of power:**
*(minutes of outage * number of members effected)/60*

OCEC 2019 Outage
Detailed Summary By Cause

DETAILED SUMMARY BY CAUSE													
GENERATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
GEN-GENERATION	-	-	-	-	-	-	-	-	-	-	-	-	-
GEN-TOWERS, POLES, FIXTURES	-	-	-	-	-	-	-	-	-	-	-	-	-
GEN-CONDUCTORS AND DEVICES	-	-	-	-	-	-	-	-	-	-	-	-	-
GEN-TRANSMISSION SUB	-	-	-	-	-	-	-	-	-	-	-	-	-
GEN-GENERATION OR TRANSMISSION, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-	-	-	-	-	-	-	-	-	-	-	-	-
DISTRIBUTION SUBSTATION													
DIST-POWER TRANSFORMER	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-VOLTAGE REGULATOR	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-LIGHTNING ARRESTER	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-SOURCE SIDE FUSE	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-CIRCUIT BREAKER	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-SWITCH	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-METERING EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-
DIST-DISTRIBUTION SUBSTATION , OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-	-	-	-	-	-	-	-	-	-	-	-	-
POLES AND FIXTURES													
POL-POLES	-	-	-	-	-	-	-	-	-	-	-	-	-
POL-CROSSARM OR CROSSARM BRACE	-	-	-	-	-	-	-	-	-	-	-	-	-
POL-ANCHOR OR GUY	-	-	-	-	-	-	-	-	-	-	-	-	-
POL-POLES AND FIXTURES, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-	-	-	-	-	-	-	-	-	-	-	-	-
OVERHEAD													
OVR-OVERHEAD	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-LINE CONDUCTOR	4	-	-	-	-	-	-	-	-	-	-	-	4
OVR-CONNECTOR OR CLAMP	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-SPLICE OR DEAD END	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-JUMPER	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-INSULATOR	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-LIGHTNING ARRESTER LINE	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-FUSE CUTOFF	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-RECLOSER OR SECTIONALIZER	-	-	-	-	-	-	-	-	-	-	-	-	-
OVR-OVERHEAD LINE CONDUCTORS AND DEVICES	-	1	-	-	-	-	-	-	-	-	-	-	1
TOTALS:	4												5

OCEC 2019 Outage
Detailed Summary By Cause

DETAILED SUMMARY BY CAUSE														
UNDERGROUND														
UG-PRIMARY CABLE	-	6	-	-	-	-	-	-	-	-	-	-	-	6
UG-SPLICE OR FITTING	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-SWITCH ELBOW ARRESTER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-SECONDARY CABLE OR FITTINGS	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-ELBOW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-POTHEAD OR TERMINATOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UG-UNDERGROUND, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-													6
TRANSFORMER														
XFMR-TRANSFORMER BAD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XFMR-TRANSFORMER FUSE OR BREAKER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XFMR-TRANSFORMER ARRESTER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
XFMR-LINE TRANSFORMER, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
**SECONDARY	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEC-SECONDARY OF SERVICE CONDUCTOR	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEC-METERING EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEC-SECURITY OR STREET LIGHT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEC-SECONDARY AND SERVICE, OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SEC-XFMR-NO EQUIP FAILURE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-													-
WEATHER														
WTR-RAIN	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-LIGHTNING	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-WIND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-SNOW ICE	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-SLEET	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-EXTREME COLD	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-EXTREME HEAT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-WEATHER OTHER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTR-CLEAR, CALM	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTALS:	-													-

General Manager's Report to the Board – February 2019

General Discussion:

- OCEC will be closed on March 6th for an all-day employee training. This training is being presented by NRECA and will focus on retirement planning. As OCEC and OCEI have moved from a defined benefit pension program (RS Plan) to a defined contribution portion (401(k)), the risk has shifted from the companies to the employees. Our goal with this training is to give employees the tools to manage this risk. NRECA will also meet confidentially one-on-one with any employee to develop a specific retirement plan for that employee.

- It is rare when you have the oil industry and environmental groups agreeing with a legislative proposal on carbon, but at a recent meeting in Olympia, this was the case. I attended a stakeholder meeting on cap and trade in Olympia and it seemed everyone was positive on the general outline of the cap and trade proposal with the exception of food processors in the Moses Lake, Quincy and Tri-City areas. While this meeting seemed very positive, further discussions our lobbyists have had with key senators tell a different story. The feeling (as February 18th) is that the legislature is going to focus on the Clear Air legislation and not move on cap and trade this session. Stay tuned.

- On the Clean Air legislation, our lobbyist has had discussions with the Governor's office on the "low-income" portions of the legislation. Our major concern (among other concerns in this particular section) is that it would be a big lift for utilities to obtain income information from members so as we can count the number of low-income customers as the legislation requires. WRECA is fine with this legislation otherwise.

- The proposed legislation that will affect OCEC the most is SB 5223. This bill would:

- Increases the 0.5 percent minimum threshold to 4 percent for the cumulative generating capacity that a utility must make available for net metering systems.
- Requires as of March 31, any remaining unused kilowatt-hour (kWh) credit generated for the calendar year to be used to assist low-income residential utility customers.
- Requires electric or gas utilities with over 20,000 customers to include on customer bills the total amount of kWh of electricity consumed for the most recent 12-month period.
- Directs the Department of Commerce to convene a workgroup to identify when compensation changes for net metering systems are warranted.

The first bulleted item would have the largest impact. Right now, OCEC, having met the .5 minimum threshold for net metering, could change, at its prerogative, the compensation for new net metering units. For example, OCEC could now change its tariffs and credit power surplus power generated by new net metering installations at the wholesale power rate instead of the full retail rate as we currently do. With this legislation, we would be pre-empted from doing this until we reach the 4% threshold. (We are currently under 1% now.) This legislation is currently on the floor of the Senate and the PUDs and WRECA will push for a floor amendment that puts the cap at 2%. If this fails, then we will work the House as it moves through there.



January 22, 2019

[via e-mail](#)

Mr. David Gottula
General Manager
Okanogan Electric Cooperative

Subject: Summary Results from the 2018 Residential End-Use Survey

Dear Mr. Gottula:

We have completed our analysis of the end-use survey that was mailed to a sample of your residential customers last fall. This survey was coordinated with PNGC Power as part of ongoing efforts to support conservation planning, load forecasting, and other applications. The attached pages summarize the key results for your system and compare them to previous surveys conducted in 2010, 2013, 2014, and 2016 along with the PNGC averages for all surveys. The first four pages include tabular comparisons with substantial detail, and the remaining pages include graphic summaries of your system's results for easy review. The final pages include comments provided by your member-customers along with their contact info, if provided. We encourage you to read these for any that may require a direct response.

In addition to the results for your cooperative, we are attaching a detailed report of PNGC-level results to this e-mail. The PNGC report includes substantial information at the PNGC level and some cooperative-level detail for key items.

If you have any questions about the results or would like additional information about the survey responses for your cooperative, please feel free to contact me at (608) 442-8668 or doug.carlson@clearspringenergy.com, or contact Jeff Kugel at PNGC Power at (503) 528-5312 or JKugel@pngcpower.com.

Thank you again for your participation in this important planning effort,

Douglas K. Carlson
Principal Consultant

C: Jeff Kugel, PNGC Power

2018 Residential End-Use Survey Results Summary

Okanogan

Notes: Co-op responses have a confidence interval of approximately +/- 5.0%
 PNGC responses have a confidence interval of approximately +/- 1.3%
 Orcas is included in 2016 & 2018 PNGC averages, but was not included in previous surveys

Q1 Residential Account Type

	Yr-Round Home with Farm*	Yr-Round Home w/o Farm	Seasonal Residence	Other Residence	Non-Home Account	Total
PNGC Avg. 2010	19.0%	67.8%	11.9%	1.0%	0.4%	100.0%
PNGC Avg. 2013	15.3%	71.8%	11.3%	1.1%	0.4%	100.0%
PNGC Avg. 2014	13.7%	72.2%	12.7%	1.0%	0.5%	100.0%
PNGC Avg. 2016	13.2%	71.4%	13.9%	1.1%	0.3%	100.0%
PNGC Avg. 2018	12.8%	73.5%	12.4%	1.1%	0.2%	100.0%
Okanogan 2010	10.4%	45.5%	41.7%	1.5%	0.9%	100.0%
Okanogan 2013	8.4%	46.1%	42.6%	1.6%	1.2%	100.0%
Okanogan 2014	6.4%	55.9%	36.2%	1.0%	0.4%	100.0%
Okanogan 2016	4.6%	51.5%	41.5%	1.5%	0.9%	100.0%
Okanogan 2018	5.5%	51.8%	40.1%	1.3%	1.3%	100.0%

*The 2013+ surveys specified a "working" farm, which may have impacted responses

Q2 Dwelling Type

	Single Family House	Mobile Home or Trailer	Manufactured Home	Townhouse, Condo, Duplex	Apartment	Other	Total
PNGC Avg. 2010	73.7%	7.9%	13.0%	2.0%	1.0%	2.3%	100.0%
PNGC Avg. 2013	74.6%	7.1%	13.8%	1.8%	0.8%	2.0%	100.0%
PNGC Avg. 2014	75.3%	6.9%	12.9%	2.7%	0.8%	1.5%	100.0%
PNGC Avg. 2016	77.7%	5.8%	11.2%	2.1%	0.8%	2.5%	100.0%
PNGC Avg. 2018	76.6%	5.1%	11.7%	2.3%	1.1%	3.1%	100.0%
Okanogan 2010	84.2%	6.1%	4.2%	1.7%	0.6%	3.3%	100.0%
Okanogan 2013	86.3%	3.9%	6.0%	1.0%	0.2%	2.5%	100.0%
Okanogan 2014	88.1%	3.0%	5.5%	0.6%	0.0%	2.8%	100.0%
Okanogan 2016	91.1%	0.6%	4.0%	0.9%	0.3%	3.1%	100.0%
Okanogan 2018	88.4%	3.9%	3.7%	2.4%	0.0%	1.6%	100.0%

Q3 Basement Type

	Full Basement - Whole Home	Crawl Space - Whole Home	Slab Under Whole Home	Combo Bsmt & Crawl Space	Combo Crawl Space & Slab	Other	None New in 2013	Total
PNGC Avg. 2010	12.0%	65.2%	8.0%	6.9%	7.8%	7.8%	None	100.0%
PNGC Avg. 2013	11.9%	58.4%	7.7%	6.2%	9.2%	4.5%	2.1%	100.0%
PNGC Avg. 2014	13.1%	58.3%	6.9%	6.2%	9.9%	3.7%	1.9%	100.0%
PNGC Avg. 2016	12.1%	58.0%	8.3%	6.9%	9.3%	3.6%	1.7%	100.0%
PNGC Avg. 2018	12.0%	58.1%	8.5%	6.4%	9.1%	3.6%	2.3%	100.0%
Okanogan 2010	17.1%	48.1%	15.1%	10.4%	New in 2013	9.3%	New in 2013	100.0%
Okanogan 2013	20.0%	40.8%	15.6%	11.0%	5.6%	3.5%	3.3%	100.0%
Okanogan 2014	18.7%	47.4%	13.2%	8.5%	7.9%	3.3%	1.0%	100.0%
Okanogan 2016	19.7%	45.5%	17.2%	9.5%	5.5%	1.8%	0.6%	100.0%
Okanogan 2018	16.1%	44.6%	16.9%	7.7%	7.9%	4.5%	2.4%	100.0%

Q4 Year Home Built

	Before 1980	1980 to 1992	1993 to 2000	2001 to 2008	2009 or later	Total
PNGC Avg. 2010	42.8%	18.2%	19.0%	17.6%	2.4%	100.0%
PNGC Avg. 2013	41.9%	19.1%	18.2%	16.9%	3.9%	100.0%
PNGC Avg. 2014	41.1%	16.7%	18.4%	18.9%	4.9%	100.0%
PNGC Avg. 2016	39.4%	18.8%	18.3%	17.0%	6.5%	100.0%
PNGC Avg. 2018	36.9%	20.1%	17.4%	16.6%	9.0%	100.0%
Okanogan 2010	22.1%	20.2%	25.1%	27.4%	5.1%	100.0%
Okanogan 2013	21.2%	17.8%	21.9%	29.7%	9.3%	100.0%
Okanogan 2014	22.0%	18.5%	22.6%	24.0%	12.8%	100.0%
Okanogan 2016	18.5%	17.6%	21.9%	27.3%	14.7%	100.0%
Okanogan 2018	18.7%	22.4%	19.2%	19.5%	20.3%	100.0%

Q5 Home Size (Sq. Ft.)

	≤ 1,000	1,000 to 1,499	1,500 to 1,999	2,000 to 2,499	2,500 to 2,999	3,000 to 3,499	3,500 to 3,999	4,000+*	Wtd. Avg.
PNGC Avg. 2010	9.7%	26.7%	26.6%	16.4%	8.9%	5.9%	2.9%	2.9%	1,909
PNGC Avg. 2013	9.1%	26.1%	27.8%	16.5%	9.4%	5.5%	2.3%	3.3%	1,916
PNGC Avg. 2014	9.0%	25.5%	26.5%	16.4%	9.9%	6.2%	2.5%	4.0%	1,957
PNGC Avg. 2016	8.2%	24.7%	27.8%	17.5%	9.1%	6.3%	3.0%	3.5%	1,964
PNGC Avg. 2018	8.5%	25.1%	26.6%	18.0%	10.0%	6.2%	2.4%	3.3%	1,953
Okanogan 2010	18.6%	25.6%	24.7%	17.5%	5.5%	5.3%	1.4%	1.4%	1,720
Okanogan 2013	16.2%	26.6%	24.1%	17.9%	7.8%	4.2%	1.7%	1.5%	1,756
Okanogan 2014	11.5%	28.2%	28.8%	16.2%	6.7%	4.5%	2.2%	1.8%	1,801
Okanogan 2016	10.6%	32.1%	26.2%	16.5%	6.5%	4.4%	1.6%	2.2%	1,783
Okanogan 2018	11.1%	29.6%	24.9%	15.9%	9.0%	5.6%	2.1%	1.9%	1,832

* The 2010 responses for 3,500+ are split evenly between the top two categories for comparisons.

Q6 Access to Natural Gas				
	Yes	No	Don't Know	Total
PNGC Avg. 2010	15.5%	78.3%	6.2%	100.0%
PNGC Avg. 2013	14.5%	78.3%	7.2%	100.0%
PNGC Avg. 2014	15.8%	77.3%	6.9%	100.0%
PNGC Avg. 2016	14.0%	79.4%	6.6%	100.0%
PNGC Avg. 2018	15.5%	77.7%	6.8%	100.0%
Okanogan 2010	11.5%	83.5%	5.1%	100.0%
Okanogan 2013	10.9%	84.1%	5.0%	100.0%
Okanogan 2014	6.7%	87.6%	5.7%	100.0%
Okanogan 2016	7.8%	86.9%	5.3%	100.0%
Okanogan 2018	9.2%	82.9%	7.9%	100.0%

Q7 Home Internet Service								
	None	Yes_Fiber	Yes_DSL	Yes_Cable	Yes_Satellite	Yes_Dial-Up	Yes_Other	Total
PNGC Avg. 2010	24.9%	(not separated)	29.5%	14.8%	13.3%	10.5%	6.9%	100.0%
PNGC Avg. 2013	23.1%	(not separated)	30.9%	16.6%	14.9%	4.9%	9.6%	100.0%
PNGC Avg. 2014	19.2%	(not separated)	29.7%	19.5%	17.3%	3.6%	10.8%	100.0%
PNGC Avg. 2016	18.6%	(not separated)	29.1%	20.8%	18.4%	2.8%	10.3%	100.0%
PNGC Avg. 2018	17.6%	7.6%	22.1%	22.0%	18.4%	(not separated)	12.4%	100.0%
Okanogan 2010	34.6%	(not separated)	33.0%	1.3%	12.9%	4.3%	13.9%	100.0%
Okanogan 2013	26.2%	(not separated)	38.8%	2.9%	14.7%	1.3%	16.1%	100.0%
Okanogan 2014	23.4%	(not separated)	38.4%	2.0%	14.2%	1.2%	20.7%	100.0%
Okanogan 2016	23.7%	(not separated)	34.3%	6.2%	13.7%	1.6%	20.6%	100.0%
Okanogan 2018	20.4%	3.0%	26.6%	5.1%	19.4%	(not separated)	25.5%	100.0%

Q8 Primary Home Heating Fuel							
	Electricity *	Natural Gas	LP Gas/ Propane	Fuel Oil	Wood/ Pellets	Other	Total
PNGC Avg. 2010	52.8%	9.2%	11.7%	2.5%	23.0%	0.8%	100.0%
PNGC Avg. 2013	52.1%	8.7%	10.1%	2.5%	25.5%	1.0%	100.0%
PNGC Avg. 2014	57.3%	8.8%	10.7%	2.1%	20.3%	0.8%	100.0%
PNGC Avg. 2016	57.2%	8.3%	10.8%	1.9%	20.4%	1.3%	100.0%
PNGC Avg. 2018	59.7%	9.9%	10.3%	1.4%	17.9%	0.8%	100.0%
Okanogan 2010	51.1%	0.0%	23.0%	0.6%	25.0%	0.4%	100.0%
Okanogan 2013	49.6%	0.4%	23.9%	0.6%	24.4%	1.1%	100.0%
Okanogan 2014	56.6%	0.2%	17.2%	0.6%	24.5%	0.8%	100.0%
Okanogan 2016	52.8%	0.0%	25.8%	1.2%	18.9%	1.2%	100.0%
Okanogan 2018	58.2%	0.8%	19.7%	0.0%	20.0%	1.3%	100.0%

*Some electric combinations also included in electric

Q9 Primary Home Heating Equipment (all fuels)											
	Geothermal Heat Pump	Air Heat Pump w/Ducts	Air Heat Pump w/o Ducts	Electric Baseboards	Forced Air Furnace	Hot Water/ Steam	Wood or Pellet Stove	Space Heat or Fireplace	Other	Combo	
PNGC Avg. 2010	2.6%	18.9%	1.5%	11.8%	31.3%	2.5%	18.6%	5.9%	0.4%	6.5%	
PNGC Avg. 2013	2.7%	20.3%	1.7%	9.3%	29.9%	2.9%	20.0%	6.6%	0.3%	6.3%	
PNGC Avg. 2014	2.6%	22.0%	2.6%	10.7%	30.3%	2.4%	16.6%	6.3%	0.5%	6.0%	
PNGC Avg. 2016	2.4%	20.6%	3.7%	11.7%	27.6%	3.3%	17.3%	7.2%	0.3%	6.0%	
PNGC Avg. 2018	1.9%	20.7%	5.1%	10.9%	28.8%	3.6%	15.2%	6.8%	0.3%	6.6%	
Okanogan 2010	2.2%	8.6%	0.6%	22.1%	21.2%	6.2%	20.8%	13.3%	0.4%	4.7%	
Okanogan 2013	1.0%	10.0%	0.2%	22.4%	19.9%	7.5%	20.5%	11.9%	0.0%	6.5%	
Okanogan 2014	1.4%	11.9%	0.8%	25.1%	20.2%	5.5%	19.0%	10.3%	1.0%	4.8%	
Okanogan 2016	2.2%	9.2%	1.5%	25.2%	19.1%	8.6%	16.6%	12.9%	0.0%	4.6%	
Okanogan 2018	1.6%	12.6%	1.8%	26.1%	16.8%	7.9%	17.6%	11.6%	0.0%	3.9%	

Q12 Air Conditioning/Cooling System									
	None/ Fans Only	Central Air	Heat Pump (all)*	Geothermal Heat Pump	Air Heat Pump w/Ducts	Ductless Heat Pump	Window/ Wall/ Portable	Other	Total
PNGC Avg. 2010	45.8%	12.8%	26.5%	Detailed heat pump info not in 2010 survey			13.4%	1.5%	100.0%
PNGC Avg. 2013	46.1%	11.6%	28.8%	2.2%	24.5%	2.1%	12.1%	1.4%	100.0%
PNGC Avg. 2014	42.9%	10.2%	32.9%	2.9%	26.0%	3.9%	12.6%	1.3%	100.0%
PNGC Avg. 2016	42.8%	10.2%	33.3%	3.2%	24.5%	5.6%	12.5%	1.3%	100.0%
PNGC Avg. 2018	39.9%	11.1%	35.7%	2.6%	25.8%	7.3%	12.1%	1.2%	100.0%
Okanogan 2010	59.7%	4.3%	15.2%	Detailed heat pump info not in 2010 survey			17.5%	3.3%	100.0%
Okanogan 2013	62.7%	5.0%	15.1%	1.7%	12.6%	0.8%	14.3%	2.9%	100.0%
Okanogan 2014	60.0%	3.6%	18.8%	1.2%	15.4%	2.2%	14.9%	2.6%	100.0%
Okanogan 2016	58.0%	2.1%	20.9%	2.8%	13.8%	4.3%	17.5%	1.5%	100.0%
Okanogan 2018	54.1%	2.4%	24.1%	1.0%	17.3%	5.8%	17.3%	2.1%	100.0%

Q14 Water Heater Fuel								
	Heat Pump (Electric)	Electric (Not Heat Pump)	Natural Gas	LP Gas/ Propane	Other	No Separate Water Heater	Total	Electric (All)
PNGC Avg. 2010	(not separated)	82.6%	9.5%	7.4%	0.2%	0.4%	100.0%	82.6%
PNGC Avg. 2013	(not separated)	83.4%	8.3%	7.6%	0.3%	0.4%	100.0%	83.4%
PNGC Avg. 2014	4.1%	78.5%	8.9%	7.8%	0.5%	0.3%	100.0%	82.6%
PNGC Avg. 2016	4.5%	77.6%	8.0%	7.9%	1.5%	0.4%	100.0%	82.1%
PNGC Avg. 2018	4.9%	77.1%	9.0%	7.9%	0.8%	0.3%	100.0%	82.0%
Okanogan 2010	(not separated)	79.1%	0.6%	19.7%	0.2%	0.4%	100.0%	79.1%
Okanogan 2013	(not separated)	81.6%	0.8%	16.4%	0.6%	0.6%	100.0%	81.6%
Okanogan 2014	3.0%	79.9%	1.0%	15.7%	0.2%	0.2%	100.0%	82.9%
Okanogan 2016	3.7%	74.8%	0.6%	20.2%	0.3%	0.3%	100.0%	78.5%
Okanogan 2018	3.9%	78.4%	1.1%	15.3%	1.1%	0.3%	100.0%	82.4%

Q17 Kitchen Range/Stove Fuel

	Electric*	Natural Gas	LP Gas/ Propane	None	Other	Total
PNGC Avg. 2010	81.4%	5.3%	12.9%	0.2%	0.1%	100.0%
PNGC Avg. 2013	80.9%	4.6%	13.8%	0.2%	0.5%	100.0%
PNGC Avg. 2014	77.8%	5.6%	16.0%	0.2%	0.4%	100.0%
PNGC Avg. 2016	76.8%	5.4%	17.2%	0.1%	0.4%	100.0%
PNGC Avg. 2018	75.9%	5.4%	17.9%	0.3%	0.5%	100.0%
Okanogan 2010	60.9%	1.7%	36.3%	0.7%	0.4%	100.0%
Okanogan 2013	63.3%	1.7%	33.4%	0.6%	1.0%	100.0%
Okanogan 2014	61.2%	1.4%	35.8%	0.8%	0.8%	100.0%
Okanogan 2016	62.3%	0.9%	35.6%	0.6%	0.6%	100.0%
Okanogan 2018	52.4%	2.4%	43.2%	0.5%	1.6%	100.0%

*Includes some combination units

Q18 Clothes Dryer Fuel

	Electric	Natural Gas	LP Gas/ Propane	None	Other	Total
PNGC Avg. 2010	91.1%	3.0%	2.5%	3.3%	0.0%	100.0%
PNGC Avg. 2013	90.8%	2.0%	2.6%	4.6%	0.0%	100.0%
PNGC Avg. 2014	91.4%	2.2%	2.9%	3.5%	0.0%	100.0%
PNGC Avg. 2016	91.5%	2.3%	2.5%	3.7%	0.0%	100.0%
PNGC Avg. 2018	91.3%	2.0%	2.8%	3.8%	0.1%	100.0%
Okanogan 2010	77.7%	2.2%	5.6%	14.5%	0.0%	100.0%
Okanogan 2013	83.3%	1.0%	4.4%	11.2%	0.0%	100.0%
Okanogan 2014	86.5%	0.6%	3.7%	9.2%	0.0%	100.0%
Okanogan 2016	86.2%	0.3%	3.4%	10.1%	0.0%	100.0%
Okanogan 2018	89.5%	0.3%	3.1%	7.1%	0.0%	100.0%

Q19 Type of Clothes Washer

	None	Standard Efficiency	High Efficiency, High Efficiency,		Combo	Total
			Top Load	Front Load		
PNGC Avg. 2010	4.1%	48.3%	17.7%	29.9%	Not separated	100.0%
PNGC Avg. 2013	4.0%	41.3%	22.1%	32.5%	Not separated	100.0%
PNGC Avg. 2014	3.3%	41.4%	23.5%	31.7%	0.1%	100.0%
PNGC Avg. 2016	3.1%	37.8%	26.0%	32.9%	0.3%	100.0%
PNGC Avg. 2018	3.6%	33.0%	29.6%	33.5%	0.4%	100.0%
Okanogan 2010	14.8%	39.5%	11.8%	33.9%	Not separated	100.0%
Okanogan 2013	9.6%	34.9%	13.2%	42.3%	Not separated	100.0%
Okanogan 2014	6.9%	38.9%	13.8%	40.3%	0.0%	100.0%
Okanogan 2016	7.4%	36.5%	14.4%	41.4%	0.3%	100.0%
Okanogan 2018	4.7%	36.2%	15.0%	43.6%	0.5%	100.0%

Q20+ Other Appliances - Kitchen & Laundry

	Refrigerator	2+ Refrigs	Separate Freezer	2+ Freezers	Dishwasher	Electric Range/ Oven	Electric Clothes Dryer
PNGC Avg. 2010	98.5%	38.3%	67.1%	18.1%	79.2%	81.4%	91.1%
PNGC Avg. 2013	99.0%	33.9%	67.8%	17.8%	79.4%	80.9%	90.8%
PNGC Avg. 2014	99.2%	33.6%	66.7%	16.0%	81.1%	77.8%	91.4%
PNGC Avg. 2016	99.0%	35.3%	66.1%	14.3%	81.0%	76.8%	91.5%
PNGC Avg. 2018	99.1%	37.3%	67.0%	18.2%	80.6%	75.9%	91.3%
Okanogan 2010	98.4%	22.4%	40.4%	8.6%	66.7%	60.9%	77.7%
Okanogan 2013	96.9%	16.9%	43.7%	5.8%	72.7%	63.3%	83.3%
Okanogan 2014	99.0%	20.9%	51.1%	6.7%	77.3%	61.2%	86.5%
Okanogan 2016	99.1%	17.9%	43.2%	6.5%	79.6%	62.3%	86.2%
Okanogan 2018	98.4%	16.5%	45.3%	7.3%	75.9%	52.4%	89.5%

Q20+ Other Appliances & Misc.

	Conventional TV (CRT)	Plasma TV	LCD or LED TV	Computer	Portable Elec. Heater	Security Light	Home Water Well Pump	Plug-in Vehicle
PNGC Avg. 2010	71.2%	13.3%	39.6%	72.6%	New 2013	44.7%	54.0%	New 2013
PNGC Avg. 2013	61.2%	15.3%	52.0%	75.9%	53.2%	51.0%	56.0%	2.8%
PNGC Avg. 2014	52.9%	16.0%	57.2%	78.3%	51.6%	50.3%	56.2%	2.4%
PNGC Avg. 2016	46.4%	13.7%	58.1%	76.1%	49.8%	49.4%	55.1%	2.4%
PNGC Avg. 2018	39.8%	12.1%	60.6%	76.6%	51.3%	48.7%	54.4%	2.7%
Okanogan 2010	50.6%	9.6%	30.3%	57.4%	New 2013	21.6%	70.4%	New 2013
Okanogan 2013	43.5%	8.7%	46.5%	67.9%	43.5%	26.5%	70.2%	1.5%
Okanogan 2014	35.3%	7.9%	50.5%	71.4%	44.0%	28.2%	69.2%	1.4%
Okanogan 2016	29.6%	9.3%	51.2%	70.1%	43.2%	26.9%	68.5%	0.9%
Okanogan 2018	28.5%	8.6%	50.5%	71.5%	46.9%	28.8%	67.8%	2.1%

Q21-24 Energy Efficiency

	Participated in EE Program	Had home energy audit	E-Star Refrigerator	Programmable Thermostat	"Smart" Thermostat	Any CFLs*	Any LEDs
PNGC Avg. 2010	13.5%	9.6%	New 2013	42.8%	New 2018	64.0%	New 2014
PNGC Avg. 2013	12.3%	11.0%	51.8%	45.9%	New 2018	65.3%	New 2014
PNGC Avg. 2014	10.5%	11.8%	53.7%	48.6%	New 2018	85.5%	45.0%
PNGC Avg. 2016	11.6%	11.7%	55.7%	40.7%	New 2018	81.8%	65.9%
PNGC Avg. 2018	11.4%	12.2%	54.9%	47.6%	6.6%	88.6%	79.8%
Okanogan 2010	5.6%	4.1%	New 2013	37.3%	New 2018	64.4%	New 2014
Okanogan 2013	4.4%	4.2%	57.7%	37.6%	New 2018	67.3%	New 2014
Okanogan 2014	3.0%	5.1%	59.2%	47.3%	New 2018	87.9%	52.5%
Okanogan 2016	3.1%	3.4%	59.0%	40.4%	New 2018	81.7%	74.2%
Okanogan 2018	6.1%	3.4%	61.3%	42.4%	11.5%	78.1%	85.0%

* Question was asked differently in 2010 & 2013.

Q26-28 Solar Power

Locations where it's physically possible to install solar	PNGC	Somewhat or very likely to install solar	PNGC	Motivations to install solar (mean rating from 1 to 5)	PNGC
Rooftop of Home	64.3%	\$10,000	23.0%	Reducing my electric bill	4.0
Roof of garage or other	41.8%	\$15,000	11.7%	Improving the environment	3.6
Elsewhere on property	33.8%	\$20,000	4.9%	Using rebates or tax credits	3.6
Can't install solar	10.0%	\$25,000	4.2%	Generating my own energy	3.6
None/No Response	12.8%				
Okanogan	58.1%	\$10,000	42.9%	Reducing my electric bill	4.0
Okanogan	41.1%	\$15,000	22.9%	Improving the environment	4.1
Okanogan	61.0%	\$20,000	9.2%	Using rebates or tax credits	3.5
Okanogan	5.9%	\$25,000	5.6%	Generating my own energy	3.5
Okanogan	10.3%				

Q29-32 Demographics

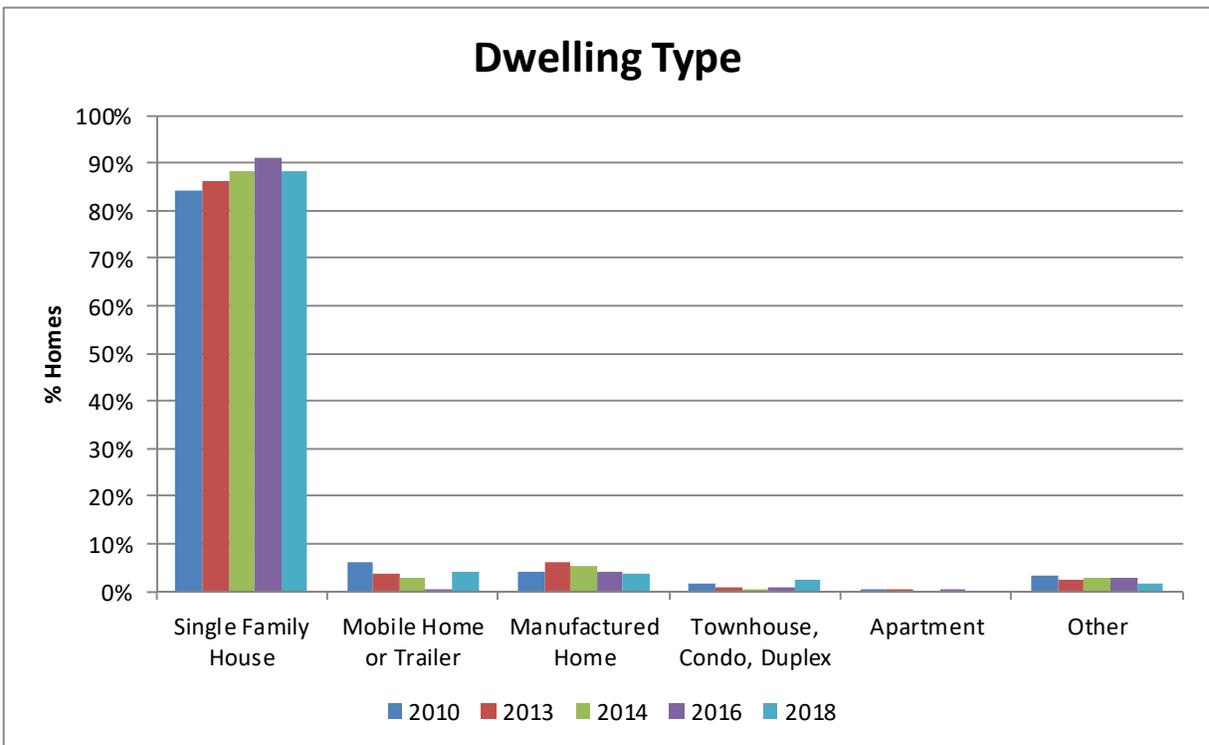
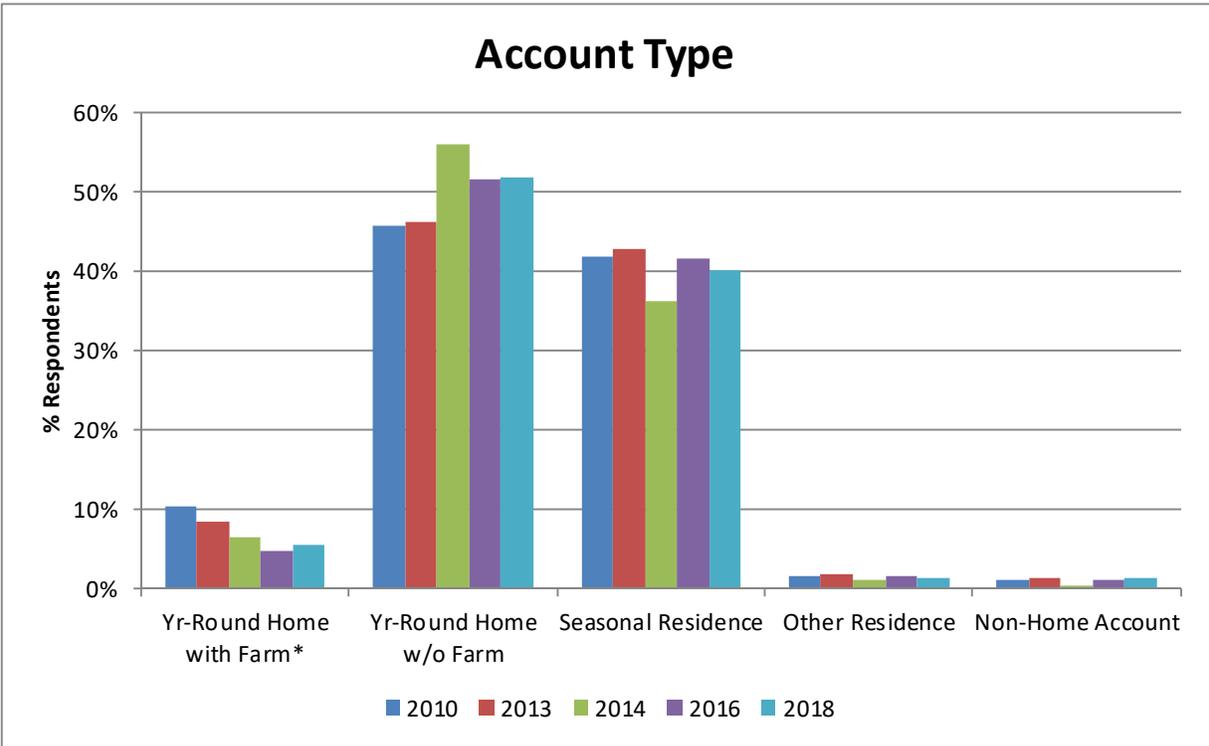
	Average Respondent Age	Average Persons per Household	Average Household Income	Served by Co-op for <5 years	Served by Co-op for 40+ years
PNGC Avg. 2010	59.3	2.26	\$ 64,736	cooperative	for cooperative for 40+ years
PNGC Avg. 2013	61.0	2.22	\$ 66,613	New 2014	New 2014
PNGC Avg. 2014	61.5	2.23	\$ 70,058	14.1%	12.9%
PNGC Avg. 2016	63.1	2.17	\$ 74,913	15.1%	15.9%
PNGC Avg. 2018	63.4	2.19	\$ 78,146	15.8%	16.7%
Okanogan 2010	58.8	2.22	\$ 90,962	New 2014	New 2014
Okanogan 2013	59.9	2.25	\$ 99,193	New 2014	New 2014
Okanogan 2014	60.8	2.34	\$ 97,718	14.9%	7.1%
Okanogan 2016	61.9	2.23	\$ 105,837	14.6%	7.3%
Okanogan 2018	62.0	2.29	\$ 116,986	16.8%	7.0%

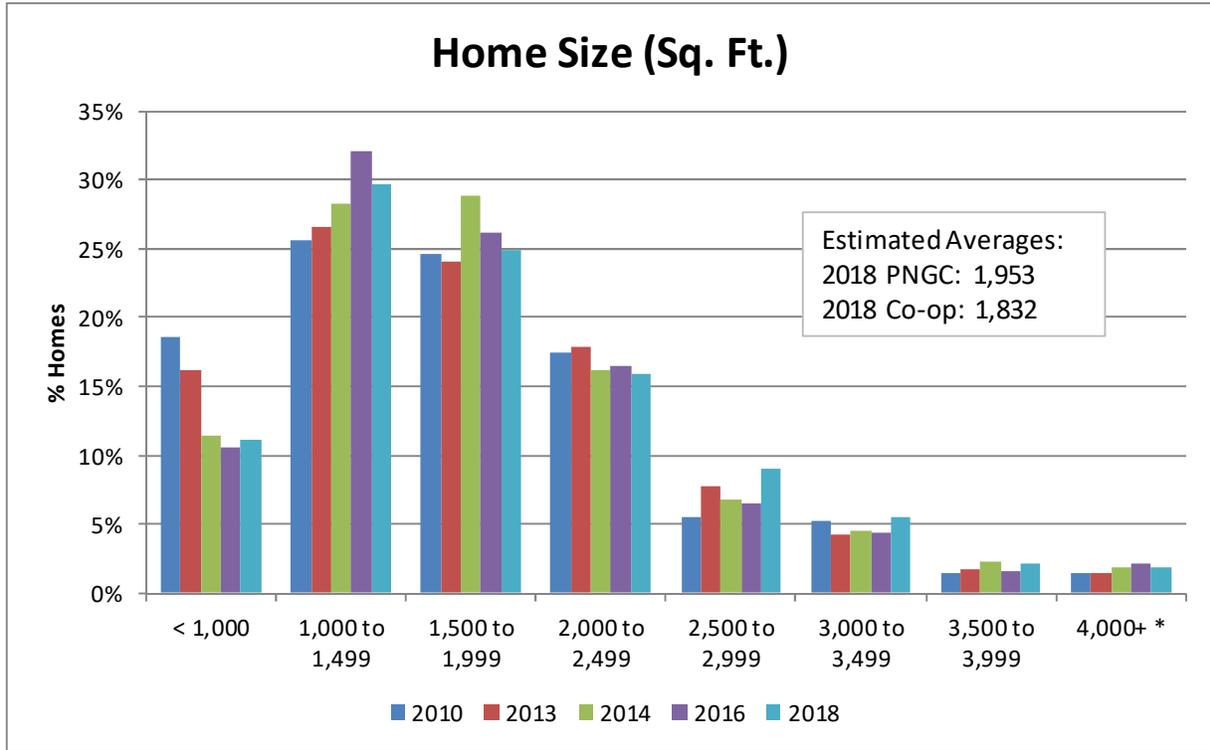
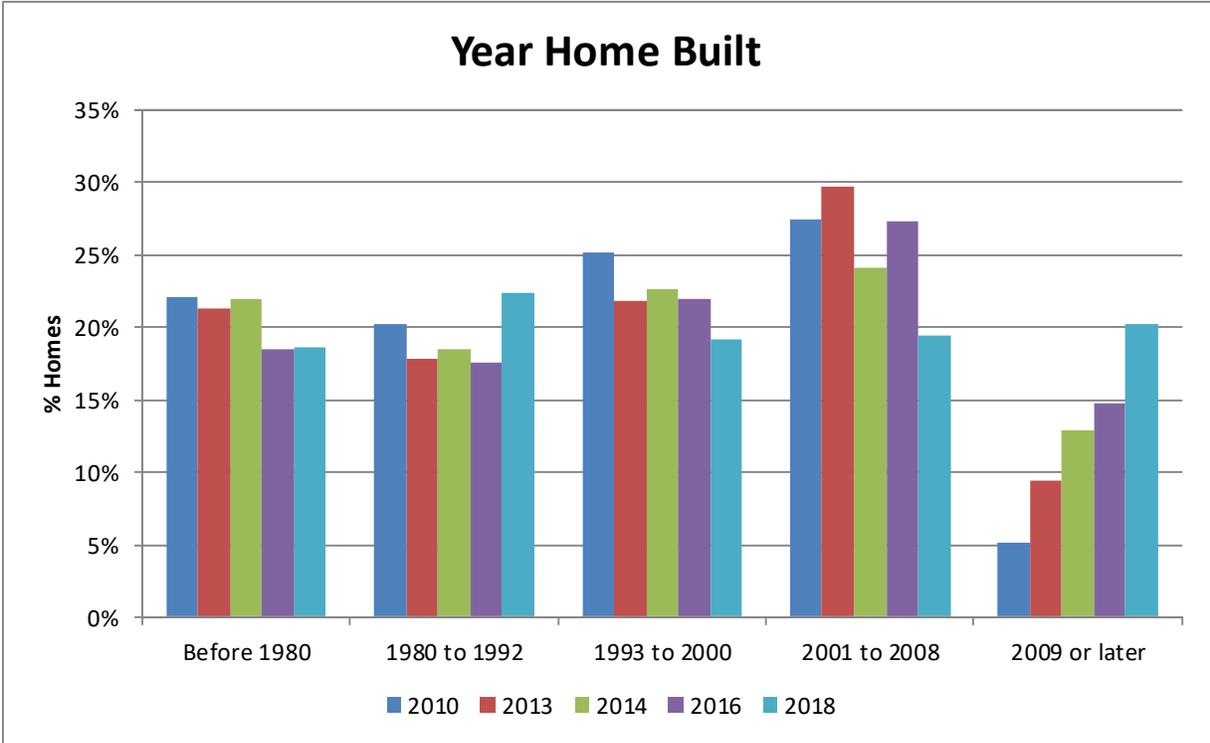
Q33-44 Attitudes about Energy Use

* Mean responses in 5-point scale: 1="Strongly Disagree"; 5="Strongly Agree"

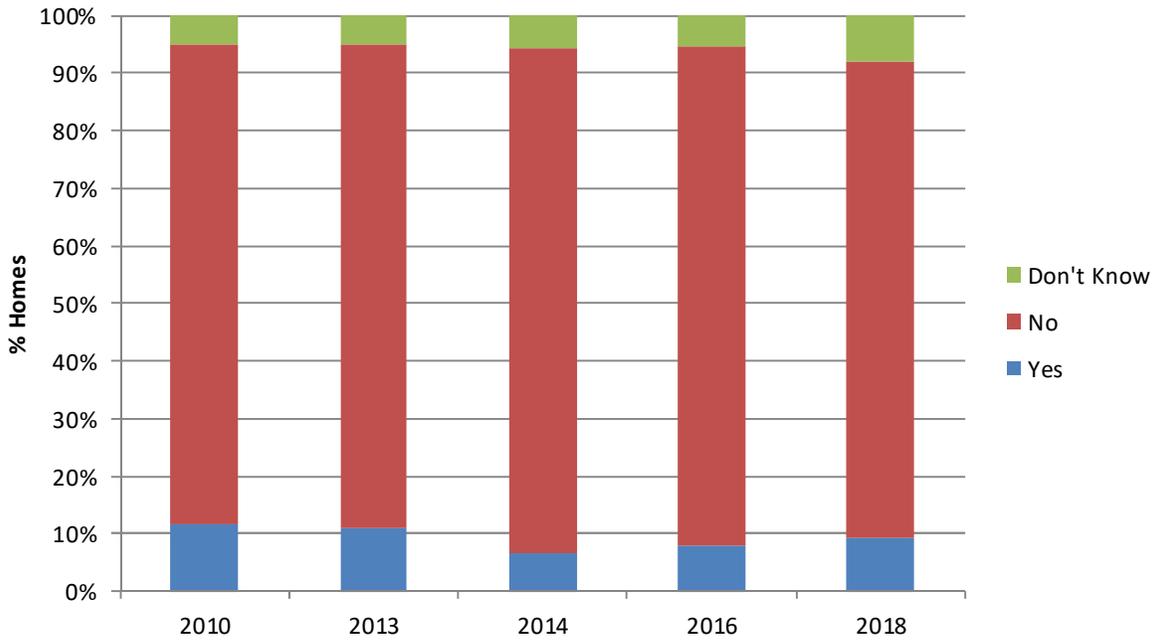
	PNGC 2010 *	PNGC 2013 *	PNGC 2014 *	PNGC 2016 *	PNGC 2018 *
Q33: It is important to find ways to control energy cost	4.37	4.31	4.33	4.25	4.15
Q34: Would shift electric use to off-peak hours for savings	3.64	3.56	3.57	3.46	3.37
Q35: Would accept water heater interruption for savings	3.10	3.08	3.01	2.92	2.92
Q36: Would use my computer/ phone to track electric use	New 2014	New 2014	2.63	2.50	2.39
Q37: Rebates are beneficial for energy efficiency	4.20	4.19	4.30	4.24	4.14
Q38: Interested in pre-pay billing option	New 2016	New 2016	New 2016	2.41	2.28
Q39: Willing to pay \$5/month extra for renewables	2.81	2.65	2.75	2.66	2.74
Q40: Would consider plug-in vehicle for \$3,000 extra	2.66	2.48	2.37	2.16	2.26
Q41: Considering installing solar in next 2 years	New 2014	New 2014	1.93	1.98	1.82
Q42: Would participate in program to own solar off-site	New 2014	New 2014	2.61	2.54	2.41
Q43: I usually read co-op's newsletter	3.84	3.89	3.87	3.88	3.80
Q44: Co-op does good job informing me of energy issues	4.11	4.17	4.17	4.13	4.18

	Okanogan 2010 *	Okanogan 2013 *	Okanogan 2014 *	Okanogan 2016 *	Okanogan 2018 *
Q33: It is important to find ways to control energy cost	4.45	4.34	4.31	4.24	4.11
Q34: Would shift electric use to off-peak hours for savings	3.79	3.67	3.55	3.40	3.36
Q35: Would accept water heater interruption for savings	3.57	3.53	3.50	3.36	3.27
Q36: Would use my computer/ phone to track electric use	New 2014	New 2014	2.81	2.70	2.53
Q37: Rebates are beneficial for energy efficiency	4.16	4.07	4.21	4.23	4.10
Q38: Interested in pre-pay billing option	New 2016	New 2016	New 2016	2.66	2.42
Q39: Willing to pay \$5/month extra for renewables	3.08	3.00	3.13	3.17	3.43
Q40: Would consider plug-in vehicle for \$3,000 extra	2.99	2.79	2.74	2.48	2.88
Q41: Considering installing solar in next 2 years	New 2014	New 2014	2.19	2.11	2.06
Q42: Would participate in program to own solar off-site	New 2014	New 2014	2.97	2.95	3.00
Q43: I usually read co-op's newsletter	3.94	3.81	3.82	3.88	3.86
Q44: Co-op does good job informing me of energy issues	3.37	3.89	4.07	4.11	4.20

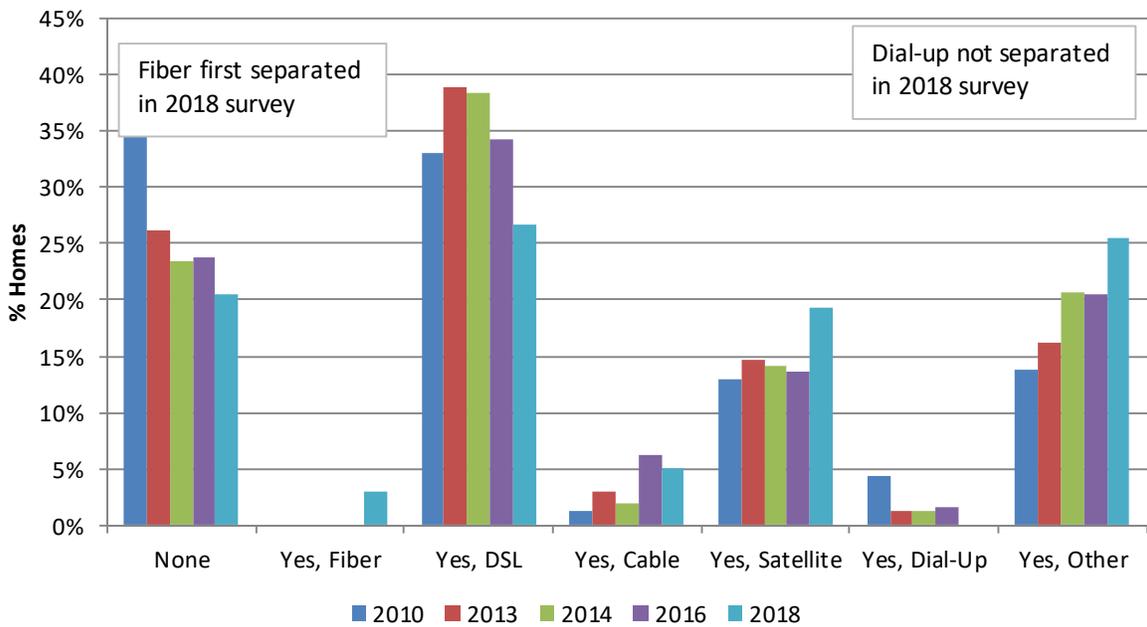




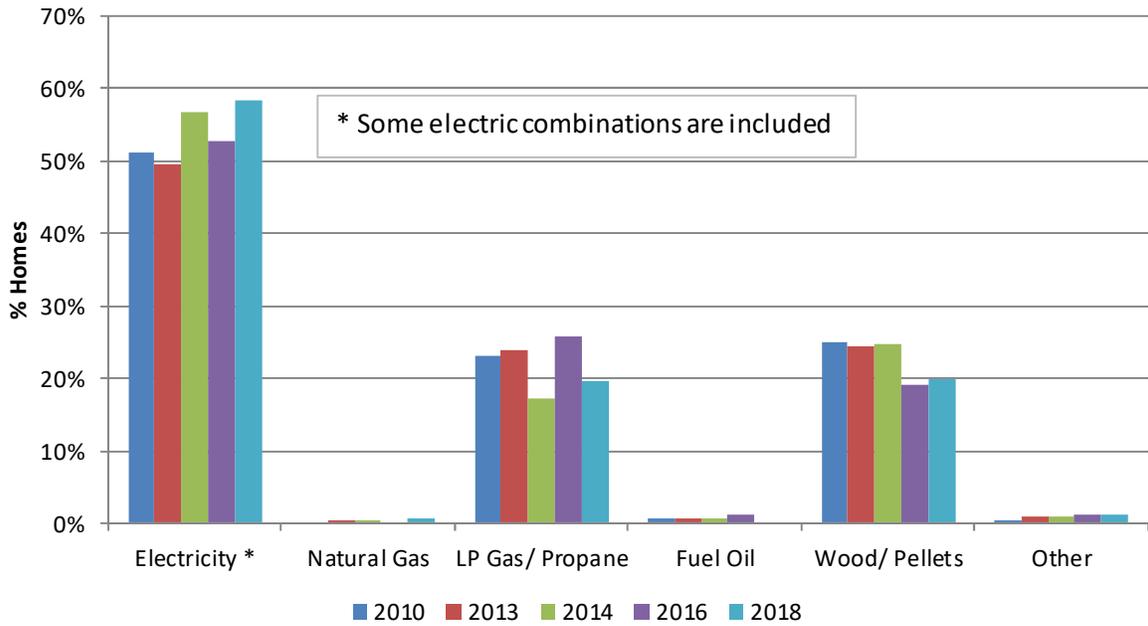
Access to Natural Gas at Home



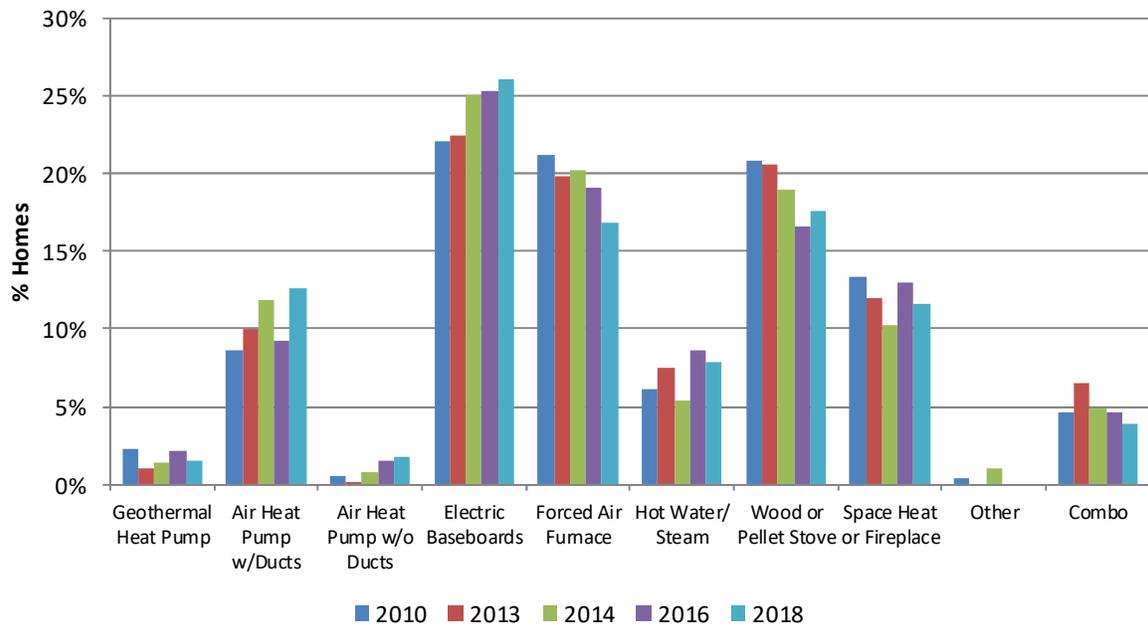
Home Internet Service



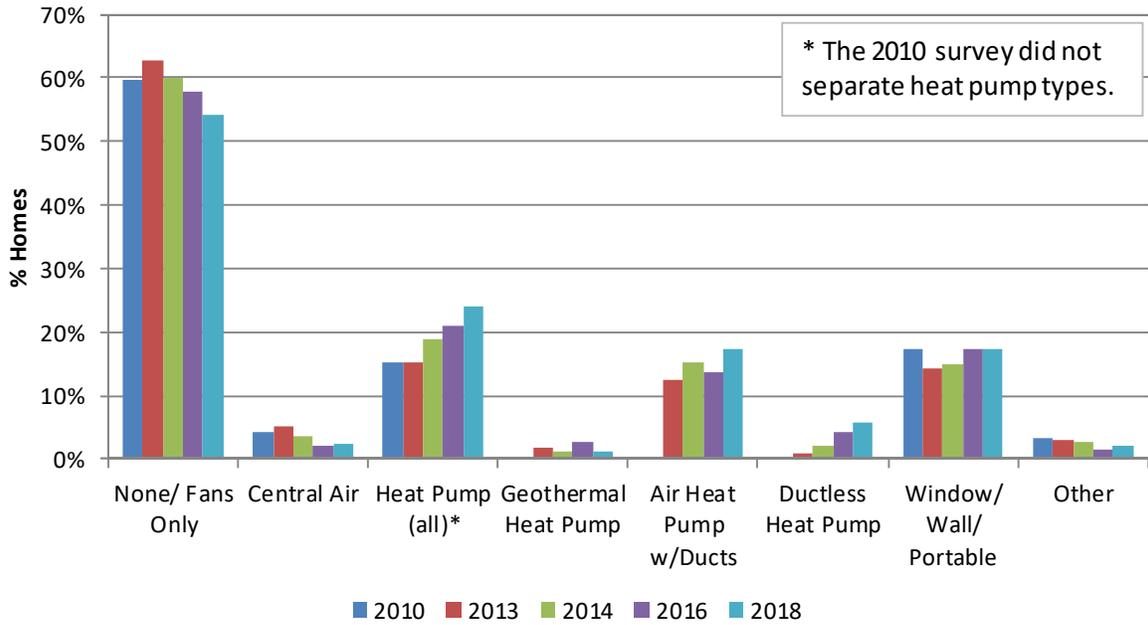
Primary Home Heating Fuel



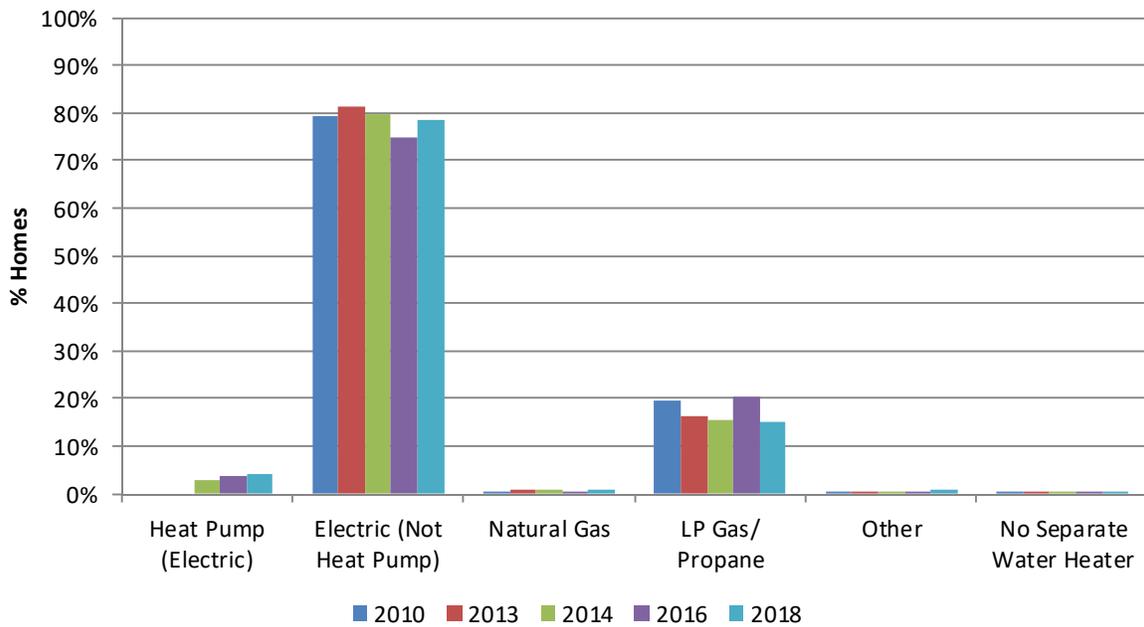
Primary Home Heating Equipment (All Fuels)

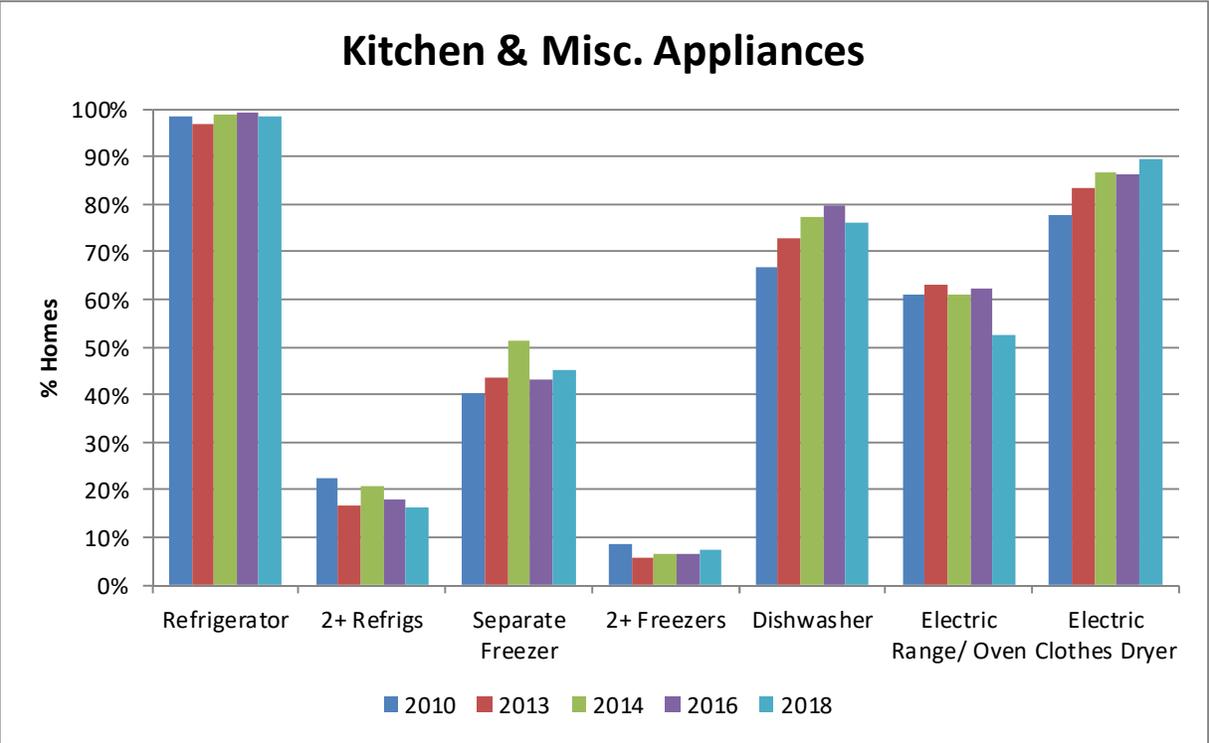


Primary Home Air Conditioning

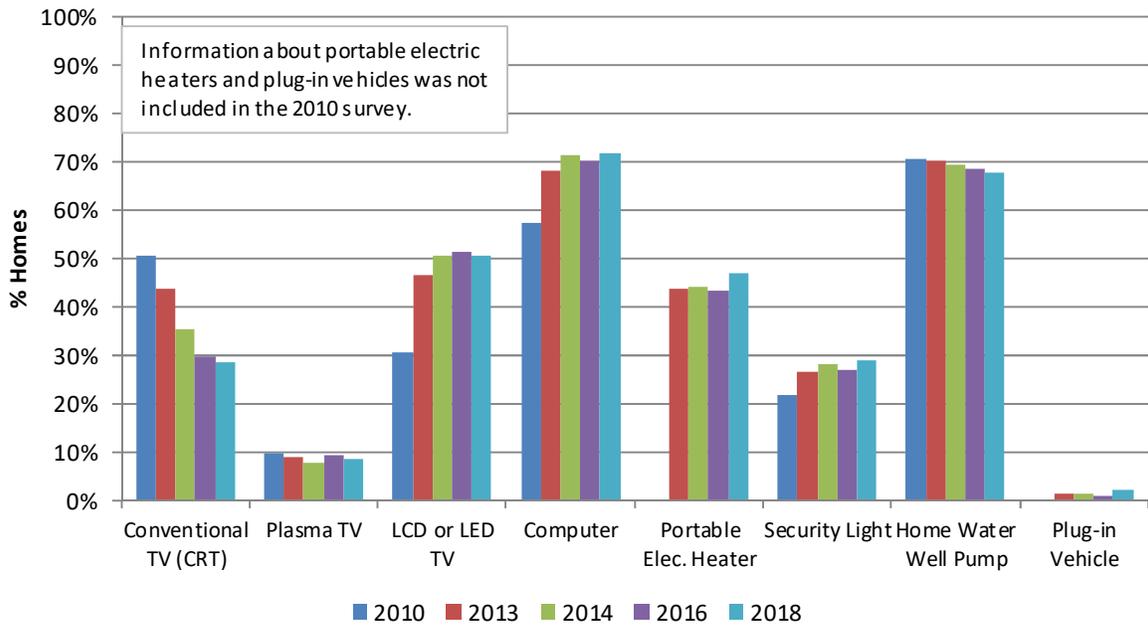


Water Heater Fuel

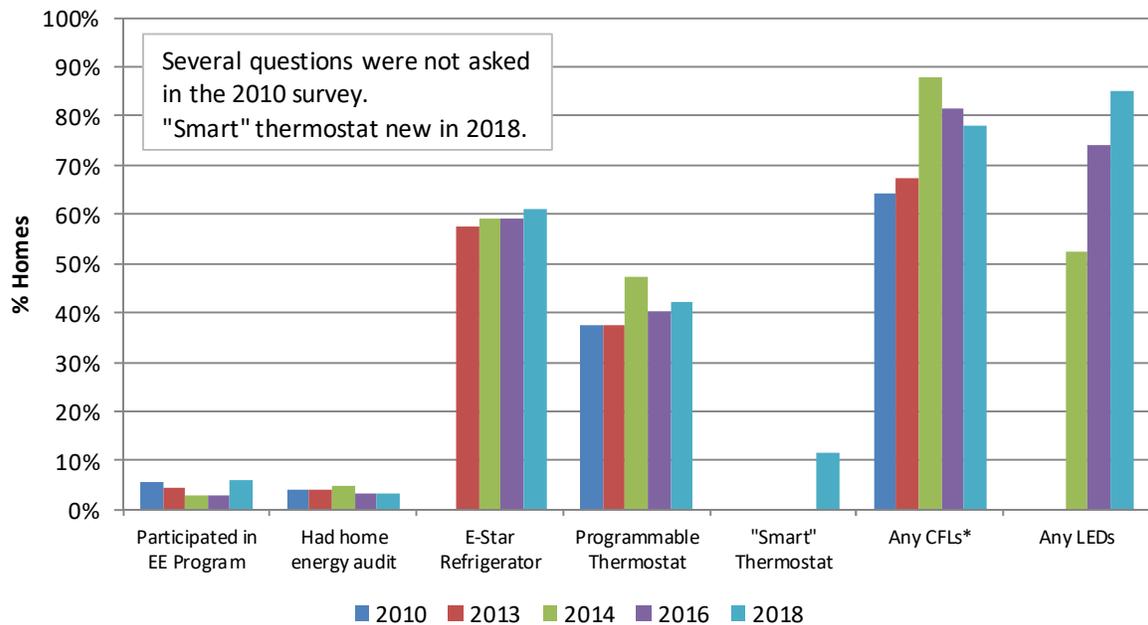


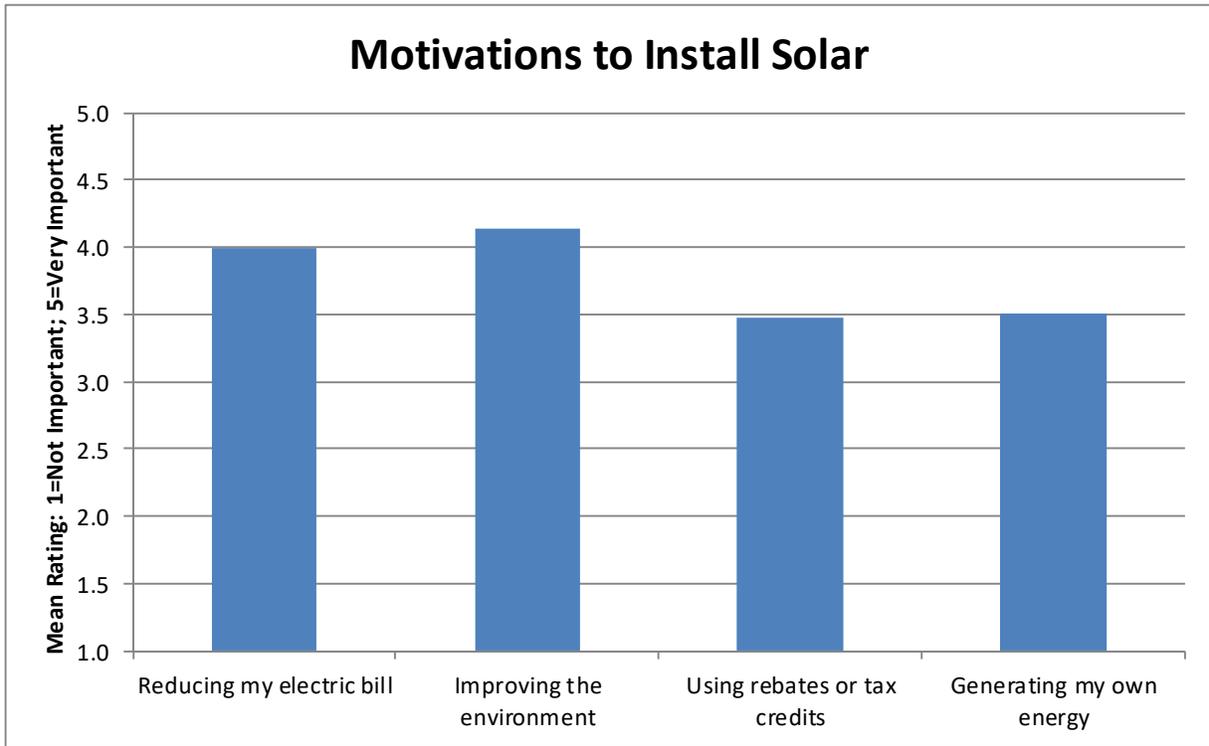
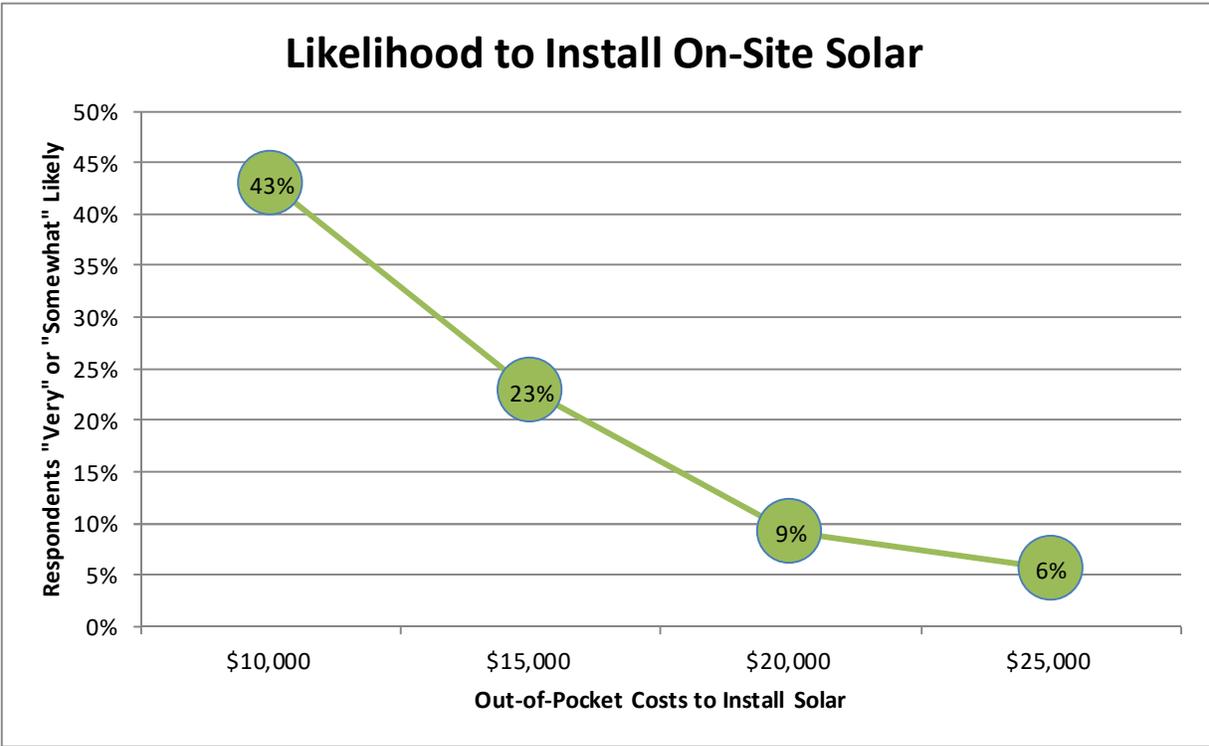


Electronics & Other Items



Energy Efficiency

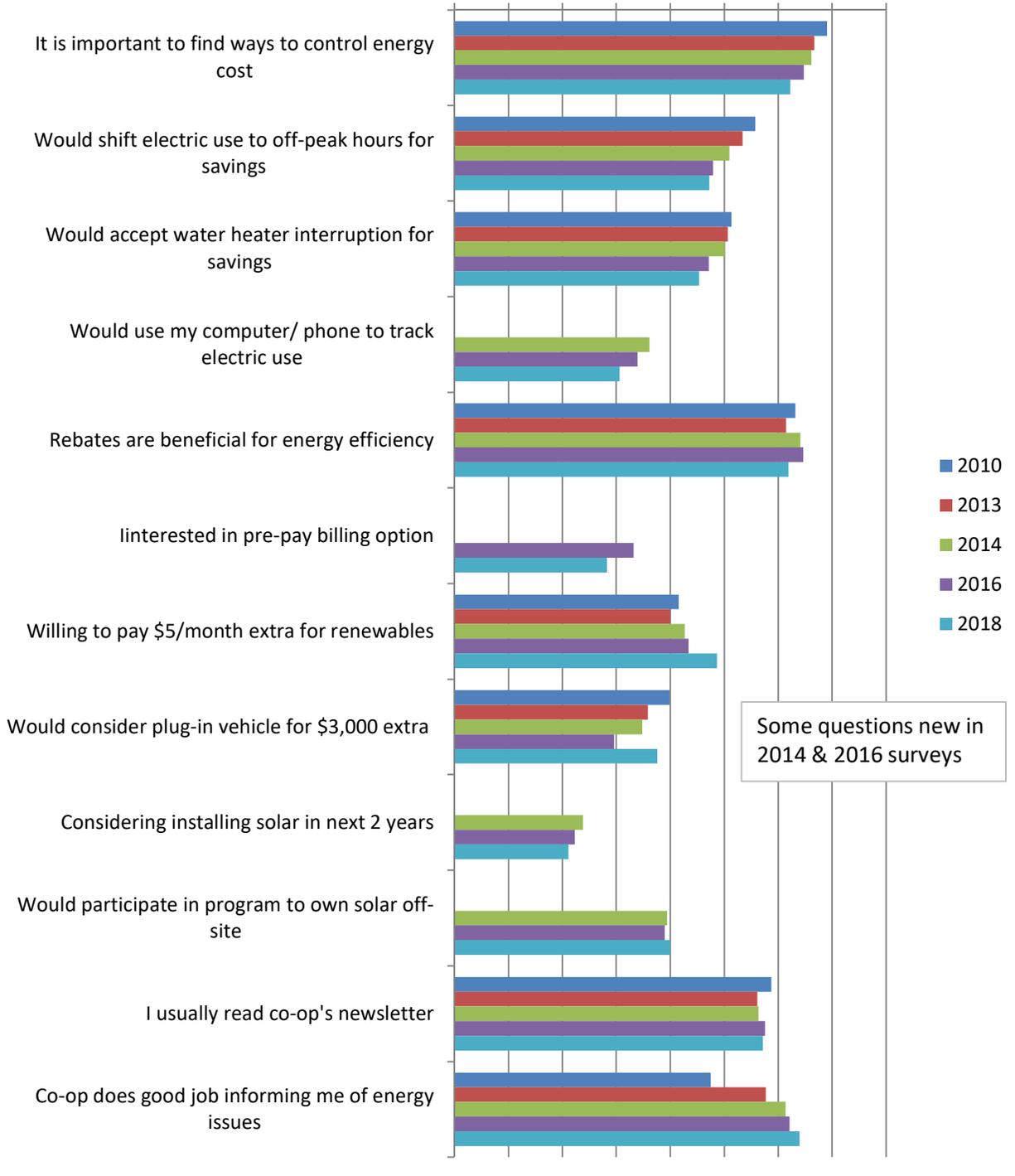




Attitudes About Energy Use

1=Strongly Disagree; 5=Strongly Agree

1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0



ADDITIONAL COMMENTS, QUESTIONS, OR CONCERNS								
COOP COOPERATV	COMMENTS COMMENTS, QUESTIONS, OR CONCERNS	Member Name	Street Address	Town	Zip Code	Phone #	E-mail address	
1178	Okanogan County Elec Coop, Inc	#40: We have one car, [UNR] is sufficient for our needs. #39: Utility scale solar & wind is less expensive than coal now. Should [UNR] reduce bills. Bio mass energy seems useful purpose to rebate solid waste & open burner, but electricity generation is a secondary benefit. Q1) Use mostly from September to May. Not during summer. Q6) Propane yes.	Christopher James	11 Cub Creek Road	Winthrop	98862	0	climatekaos@gmail.com
1179	Okanogan County Elec Coop, Inc	26 & 27 & 28 - Depend on condo association buy in					0	
1180	Okanogan County Elec Coop, Inc	Also interested in installing solar on our property.					0	
1181	Okanogan County Elec Coop, Inc	Although it does not appear to be OCEC's fault, I am disappointed that Winthrop and Mazama will have to go through another winter without redundant power from the Pateros-Twisp transmission line!	Frank VanderWolf	1 Sunset Blvd	Winthrop	98862	5093414484	fw@methownet.com
1182	Okanogan County Elec Coop, Inc	Am on a retired income (low). No way could we put in solar panels on r \$\$.					0	
1183	Okanogan County Elec Coop, Inc	Any alternative electric producing energy systems have to be cost effective and affordable to me.	Ron Telken	3 Evergreen Way	Winthrop	98862	5099967822	rontelken@gmail.com
1184	Okanogan County Elec Coop, Inc	As a seasonal owner, I am unsure of the impact we have on the grid. Multiply us by other seasonal owners and there must be substantial impact.					0	
1185	Okanogan County Elec Coop, Inc	As a seasonal, feel we have no additional recourse to lower elec costs. We have no dryer, freezer. Keep heat at 47 degrees in winter when not there. Turn off water heater... Q26) Unsure	Sheri Maurer	2367 Back Forty Ln NW	Poulsbo WA	98370	3609308296	shegeomau@comcast.net
1186	Okanogan County Elec Coop, Inc	At my 2 most recent residences, my power bills have skyrocketed when the weather turns cold. I have had multiple audits at my previous residence and was told it must be the electric heaters. Only, we had all electric baseboard heaters turned off at the breaker year round. The same thing happened last year at my new residence, again told me the same thing. But we do not use electric heat. My usage is the same year round, I do the same thing every day yet my bills change with the seasons. I feel there is a larger problem within the coop and it's practices. I believe the coop thinks they can get away with over charging people and using the seasons as an excuse. I cry foul! Q6) Propane for stove only. Q16) Brand new 3 months. Q20) Laptop on battery. Q22) At previous residence.	Jennifer Taylor	2 Rainbow Rd.	Mazama	98833	5099962833	taylor.dlbama@gmail.com
1187	Okanogan County Elec Coop, Inc	Currently renting, in process of building, will use energy efficient appliances, propane & electric heat, tankless propane hot water heater (on demand). Need more info to decide my attitude on Questions 38 & 42. We are considering solar on new build, but in future. Q6) Propane; Q27) Renting; Q38) Need more info; Q42) Need more info					0	
1188	Okanogan County Elec Coop, Inc	Do you have, or will you soon have a place to install off property solar?? re: #42	James Asa	1806 Cascade Vista	Burlington WA	98033	3602022030	travelman50@hotmail.com
1189	Okanogan County Elec Coop, Inc	Does the coop have any legal standing to provide input on the Enloye Dam issue? What is the coop's position? My suspicion is that the sediment is too contaminated to allow for breaching the dam & too expensive to mitigate. Thus electrifying is actually the cheapest option. Is this possible?	Michael Chiu				425924319	michaelchiu218@gmail.com
1190	Okanogan County Elec Coop, Inc	Electric vehicle use is more dependent on range and re-charge rate. Can't drive to Seattle and back in one day in present models.					0	
1191	Okanogan County Elec Coop, Inc	Fewer blackouts would be nice. Is it possible to bury the major power lines to avoid trees falling and taking down the lines? Nice work on the Edelweiss power line replacement by the way!	Peter Speer/Marian Osborne	27 Bitterbrush Road	Winthrop, WA	98862	9968147	modawg1955@gmail.com
1192	Okanogan County Elec Coop, Inc	For H2O heating/appliances-we and many of neighbors have in home or external saunas/hot tubs with very large peak demand. With smoke/fires-growing importance on getting air conditioning/filtering since cannot open windows at night & cool house during hot summer months. Q6) Yes-propane, No-natural gas.					0	
1193	Okanogan County Elec Coop, Inc	Good survey! I am building a shop in 2019 and solar panels at a reasonable cost benefit would be an option. Sandy	Sandy Mackie	179 Wolf Creek Rd	Winthrop WA	98862	5096810175	amackie6404@gmail.com
1194	Okanogan County Elec Coop, Inc	Good work in preparing this questionnaire.	Jim Pigott				0	
1195	Okanogan County Elec Coop, Inc	I am a part time resident who depends on reliable service to keep water pipes from freezing when I am not there. I greatly appreciate the reliability of the Electric Coops service.					0	
1196	Okanogan County Elec Coop, Inc	I am interested in any info you have about solar. Q40) Not yet.	Kelly Edwards	PO Box 172	Twisp	98856	0	engagedethics@gmail.com
1197	Okanogan County Elec Coop, Inc	I am on limited income, SSI.	Robert A Sigler	924 Castle Ave	Winthrop WA	98862	5094298448	
1198	Okanogan County Elec Coop, Inc	I consider hydro power as renewable & don't like wind turbines because they not only look horrible, but they kill so many birds.					0	
1199	Okanogan County Elec Coop, Inc	I do like the idea of some additional solar energy developed and maintained by the co-op to augment hydro-electric generation which is still & should be our main energy source. We occupy our residence in Twisp Valley approx. 1 week of every 5 on average. Q23a) (1) light, c) 95%; Q25a) (Crawl space)					0	
1200	Okanogan County Elec Coop, Inc	I drive a plug in hybrid at home in Seattle.					0	
1201	Okanogan County Elec Coop, Inc	I have an existing set of solar panels that I would install if OCEC provided incentives to hook up.	Laura Love	PO Box 516	Twisp	98856	2064066898	
1202	Okanogan County Elec Coop, Inc	I have two kids in college and a third who will be next year, so we are not in the position to make any major capital improvements for awhile.					0	
1203	Okanogan County Elec Coop, Inc	I looked into solar. We have a perfect location. When I found out I couldn't use it when the power was out I lost interest. I didn't want the hassle of batteries and a converter. Went to an automatic generator instead.					0	
1204	Okanogan County Elec Coop, Inc	I may consider retrofitting a quiet and efficient heat pump to my existing forced air electric furnace. The cooling would be nice in summer. Any recommendations?	Ronald Bomba	3628 28th Ave. W.	Seattle, WA	98199	2062861277	shop@ronbomba.com
1205	Okanogan County Elec Coop, Inc	I plan on moving out-of-state and selling my home within the next 5 yrs. That is why I am not interested in purchasing solar panels.				98862	0	
1206	Okanogan County Elec Coop, Inc	I rent this property. Owner: Laura & Russ bores Thaler.					0	
1207	Okanogan County Elec Coop, Inc	I think the coop staff (inside & outside) does an incredible job-thanks-	Mike Meyer	19571 Hwy 20	Winthrop, WA	98862	5096797679	mmce@centurytel.net
1208	Okanogan County Elec Coop, Inc	I tried to answer based upon my usage & views, but some of my answers are influenced by the fact that we are getting ready to sell this vacation home. If I was keeping this house, I would consider solar. Q41) Because selling house.					0	
1209	Okanogan County Elec Coop, Inc	I try very hard to conserve on electric power. I don't use outdoor lights unless absolutely necessary-I have lighting up the outdoors like most people seem to do. Q3) 1/2 garage; Q26) ?					0	
1210	Okanogan County Elec Coop, Inc	I want reliable low cost utility power.					0	
1211	Okanogan County Elec Coop, Inc	I would actively change my electric use if OCEC told me that it helped them and to help the environment. I am very motivated to help the environment and I am not motivated by electric prices. I would strongly consider sola panels if this is a good option for snowy winters. I would attend an event that told about cost and benefits of solar panels. Thanks!					0	
1212	Okanogan County Elec Coop, Inc	I would like to see OCEC/CANNE involved in providing high speed broadband service.	J. Kienast	215 Uppr Beaver Cr. Rd	Twisy, WA	98856	504479070	jkienastjr@gmail.com
1213	Okanogan County Elec Coop, Inc	I would love information on solar panels & also benefits of upgrading/replacing windows. Most of our windows are 30+ years old. Q4) A work in progress.	Kathy & Rolf Borgersen	588 Lower Bear Cr	Winthrop	98862	5093414311	kathyborgersen@gmail.com
1214	Okanogan County Elec Coop, Inc	I would love to go solar but cost is a factor. I'm on SSI so income is limited. If you develop something to help let me know. FYI you guys rock! Your response to outages even in bad weather has been impressive.	Tammy Risk	98a Balky Hill	Twisp	98856	5094295201	
1215	Okanogan County Elec Coop, Inc	Interest in solar. Q21) In Seattle.	Beth				0	drdido@hotmail.com
1216	Okanogan County Elec Coop, Inc	Interested in knowing more about feasibility of solar. 13 Highland Edelweiss Q26) Don't know-would like to; Q38) ??	Michael Roedell	P.O. Box 953	Seahurst, WA	98062	2062422338	carlyn22@msn.com
1217	Okanogan County Elec Coop, Inc	Is it possible to have a conventional meter instead of a smart meter? I am sensitive to RF radiation.	Carolyn Burkhart	6 Darvelaan Dr.	Mazama WA	98833	2062285904	carolyn.burkhart@yahoo.com
1218	Okanogan County Elec Coop, Inc	It is misleading to say that using solar panels will cut my electric bill because of the large up-front cost. Q6) Propane	Ron McColium	728 Wolf Creek Rd	Winthrop	98862	5099963324	ron.mccolium63@yahoo.com
1219	Okanogan County Elec Coop, Inc	It was very difficult to complete this with any accuracy because the house was moved this year due to river bank erosion. The house is in the process of remodeling - with an upgraded new furnace, hot water heater, & some appliances but nothing is installed yet and the house is not connected to water and electricity at this time.	Marian Webster	7011 SE 29th St	Mercer Is, WA	98040	2068491669	marianwebster@msn.com
1220	Okanogan County Elec Coop, Inc	It would be interesting if the coop offered solar energy "kits": panels batteries, etc. for different wattage amounts.					0	

ADDITIONAL COMMENTS, QUESTIONS, OR CONCERNS								
COOP COOPERATI	COMMENTS COMMENTS, QUESTIONS, OR CONCERNS	Member Name	Street Address	Town	Zip Code	Phone #	E-mail address	
1221	Okanogan County Elec Coop, Inc Keep up the good work. Really happy about your "dark sky" work. Thanks PDOIC.	Denny O'Callaghan	Deer Trails Way	Winthrop	98862	5094291340	dennyocallaghan@gmail.com	
1222	Okanogan County Elec Coop, Inc LED & CFL bulbs have negative health effects					0		
1223	Okanogan County Elec Coop, Inc Legislation that may affect the cost of going solar.	Eric Bum and Margrit Broennimann	585 Lost River Rd.	Mazana	98833	509963101	burski@methownet.com	
1224	Okanogan County Elec Coop, Inc More solar panels over parking lots seems like smart investment. Shade the cars & make more electricity. Pay for what you use rate structure seems more fair than the "base" & fee structure. Q22) Yes on AK no on Methow; Q24) Not sure of difference					0		
1225	Okanogan County Elec Coop, Inc My property offers limited option for locating solar panels. We chose to participate in the community solar profit for this reason. Q13) N/A.	Keith Laublun	1218 Studebaker Pl	Walla Walla	99362	5095401256	keithlaublun@charter.net	
1226	Okanogan County Elec Coop, Inc OCEC is a first class organization. We are proud that they serve our community.					0		
1227	Okanogan County Elec Coop, Inc OCEC should offer broadband interest in its service territory.					0		
1228	Okanogan County Elec Coop, Inc Our cabin is pretty small, pretty tight & uses very little energy as it is now. We are here 6 months of the year.	R Rapport	1151 TRR	Twisp	98856	0	r.rapport@uw.edu	
1229	Okanogan County Elec Coop, Inc Our home is highly efficient & doesn't need solar panels. Q26) Do not want them.	Rand & Lauri Martin	PO Box 885	Winthrop	98862	9962608	r-lmartin@hotmail.com	
1230	Okanogan County Elec Coop, Inc Our Metow Valley home is a 1,100 sq. ft. cabin. Both my husband and I own it, however 6 or more family members use it monthly along with us. Q30) This includes family who use cabin regularly otherwise two of us own the cabin.					0		
1231	Okanogan County Elec Coop, Inc Q1) 80?					0		
1232	Okanogan County Elec Coop, Inc Q1) Irrigated pastures					0		
1233	Okanogan County Elec Coop, Inc Q1) Part time					0		
1234	Okanogan County Elec Coop, Inc Q1) Sold Jan/18. Q7) Flat plate RCC Methow.net.	Dave Menziuar	6166 Blue Henderson	Clinton	98236	0	davem@wheelbay.com	
1235	Okanogan County Elec Coop, Inc Q10) Furnace 20 or more years, 5-9 yrs. propane stove.	Bettye Houser				3607080490		
1236	Okanogan County Elec Coop, Inc Q10) Under 5 years heat pump, 15-19 years furnace. Q21) Annual from coop. Q27) Have to hear options.					0		
1237	Okanogan County Elec Coop, Inc Q12) 2 areas only. Q28) Retiring.	Laurie Hobart	255 B East Chewuch Road	Winthrop, WA	98862	0		
1238	Okanogan County Elec Coop, Inc Q13 & 25) None.					0		
1239	Okanogan County Elec Coop, Inc Q13) N/A					0		
1240	Okanogan County Elec Coop, Inc Q13) N/A					0		
1241	Okanogan County Elec Coop, Inc Q13) No.					0		
1242	Okanogan County Elec Coop, Inc Q13) None					0		
1243	Okanogan County Elec Coop, Inc Q14) Don't know. Q26) ?	Tom Grayston	584 Lost River Rd	Mazama	98833	0	grayston@wu.edu	
1244	Okanogan County Elec Coop, Inc Q14) Second home.	Monetta				0	dmonetta@windemere.com	
1245	Okanogan County Elec Coop, Inc Q15) 2 50 gallons. Q16) Both.					0		
1246	Okanogan County Elec Coop, Inc Q15) 5 gallons.					0		
1247	Okanogan County Elec Coop, Inc Q15) Regular size.					0		
1248	Okanogan County Elec Coop, Inc Q17 box 1) Stove, box 3) Range; Q35) Already do this					0		
1249	Okanogan County Elec Coop, Inc Q20 Plug-in) Travel trailer; Q35) N/A					0		
1250	Okanogan County Elec Coop, Inc Q20) Shared; Q25) Haven't needed to; Q38) ?					0		
1251	Okanogan County Elec Coop, Inc Q22) Bought this house in Jan 2018; Q26) How do solar panels handle weight of snow?					0		
1252	Okanogan County Elec Coop, Inc Q23) ?					0		
1253	Okanogan County Elec Coop, Inc Q23) C 100%.	Jeff Brown	881 Wolf Creek Rd	Winthrop		9962571	jeggski4@gmail.com	
1254	Okanogan County Elec Coop, Inc Q24-a) 2	Sherill Blankenship	715 14th	Bellingham WA	98225	3603252628	sblanken35@msn.com	
1255	Okanogan County Elec Coop, Inc Q24) Tried but somehow costs very high. Q40) We have at home Seattle.					0		
1256	Okanogan County Elec Coop, Inc Q25-b) 5					0		
1257	Okanogan County Elec Coop, Inc Q25, 26) N/A.					0		
1258	Okanogan County Elec Coop, Inc Q25) Built 2014	Ringgold	70 Rising Eagle	Twisp	98856	0		
1259	Okanogan County Elec Coop, Inc Q25) Home is new in 2018.					0		
1260	Okanogan County Elec Coop, Inc Q25) New construction 2018. Q31) On other location.					0		
1261	Okanogan County Elec Coop, Inc Q25) New home					0		
1262	Okanogan County Elec Coop, Inc Q25) New home due to FIRE.	Don Owens		Twisp	98856	5094293816		
1263	Okanogan County Elec Coop, Inc Q25) New home in 2017 all the above					0		
1264	Okanogan County Elec Coop, Inc Q25) New house.					0		
1265	Okanogan County Elec Coop, Inc Q25) New house.					0		
1266	Okanogan County Elec Coop, Inc Q26, 27, 28) (Selling home-no solar updates); Q41) Possible					0		
1267	Okanogan County Elec Coop, Inc Q26) Already have solar					0		
1268	Okanogan County Elec Coop, Inc Q26) I have solar panels on the barn Q39) ? Q41) ?	Robert or Charlotte Nelson	24 Witte Rd	Winthrop	98862	9963640	cnelson@methownet.com	
1269	Okanogan County Elec Coop, Inc Q26) Maybe. Q30) Usually 4-6 when were there. Q35) We turn off.					0		
1270	Okanogan County Elec Coop, Inc Q27) Due to how little we use.					0		
1271	Okanogan County Elec Coop, Inc Q27) F.S. Rental house, N/A. Q28) F.S. Rental house, N/A. Q41-42) N/A					0		
1272	Okanogan County Elec Coop, Inc Q27) I don't have enough info to answer. How much would I reduce my bill & how much could I generate.					0		
1273	Okanogan County Elec Coop, Inc Q27) No. Q31) 37 years.					0		
1274	Okanogan County Elec Coop, Inc Q27) Rental home					0		
1275	Okanogan County Elec Coop, Inc Q28) Cost prohibits possibility.					0		
1276	Okanogan County Elec Coop, Inc Q3) N/A. Q38) ?					0		
1277	Okanogan County Elec Coop, Inc Q30) Cabin.					0		
1278	Okanogan County Elec Coop, Inc Q35) Already use timer on our hot water tank.					0		
1279	Okanogan County Elec Coop, Inc Q36) It is under the house and inconvenient to get to it.	S. Canny	374B Rendezvous Rd	Winthrop	98862	0	sacanny@gmail.com	

		ADDITIONAL COMMENTS, QUESTIONS, OR CONCERNS							
COOP COOPERATION	COMMENTS COMMENTS, QUESTIONS, OR CONCERNS	Member Name	Street Address	Town	Zip Code	Phone #	E-mail address		
1280	Okanogan County Elec Coop, Inc	Q4-1) Original Q4-4) Remodeled	Wayne & Sally Ranzau	355 Wister Way	Winthrop	98862	9568077	ranzau@methownet.com	
1281	Okanogan County Elec Coop, Inc	Q4) 1907.					0		
1282	Okanogan County Elec Coop, Inc	Q4) 2009 addition, Q10) Addition, also 10-14 years old.	Bob Bugert	2919 Canyon Road #1	Wenatchee	98801	5096705948	rbugert@gmail.com	
1283	Okanogan County Elec Coop, Inc	Q4) 4-1st floor, 5-2nd floor. Back page) We turn it off when we are not there.					0		
1284	Okanogan County Elec Coop, Inc	Q4) Burned 2014 Q26) N/A					0		
1285	Okanogan County Elec Coop, Inc	Q4) Part built in late 80's, major add-on in early 00's. Q6) We have a propane tank; Q15 box 2) We have two (2)					0		
1286	Okanogan County Elec Coop, Inc	Q41) Already have					0		
1287	Okanogan County Elec Coop, Inc	Q41) I would love to have solar panels on my property, but my total annual electrical use is too low to warrant installation of panels, unless I could sell back the excess produced.; Q40 I already own a Prius Hybrid. Would like a plug-in electric vehicle but require 300 mile range.	P Karman				3603042023	karmanpoole@gmail.com	
1288	Okanogan County Elec Coop, Inc	Q5) Second house #2; Q7) Second house no					0		
1289	Okanogan County Elec Coop, Inc	Q6) Propane.					0		
1290	Okanogan County Elec Coop, Inc	Q6) Propane.					0		
1291	Okanogan County Elec Coop, Inc	Q6) We do have propane.					0		
1292	Okanogan County Elec Coop, Inc	Q7) ? Q15-2) (2)	Al & Pat Torangeau	826 Twisp River Rd	Twisp	98856	9973012		
1293	Okanogan County Elec Coop, Inc	Q7) (?) I think? Q10) We have 2 furnaces. 1 old & 1 new, use both. (13) Same as furnaces.					0		
1294	Okanogan County Elec Coop, Inc	Q7) But it is exhausted.	Clemmis	21 Arndt Rd	Matena	98833	509963591	cabellyde@gmail.com	
1295	Okanogan County Elec Coop, Inc	Q7) Methow Net					0		
1296	Okanogan County Elec Coop, Inc	Q7) Very, very, very slow					0		
1297	Okanogan County Elec Coop, Inc	Q9 box 8) LP gas Rinnai					0		
1298	Okanogan County Elec Coop, Inc	Q9-2) Primary Q9-5) Secondary Q9-7) Not used in past 2 yrs. Q10) Heat pump Q14) We have two water heaters					0		
1299	Okanogan County Elec Coop, Inc	Q9-J) Used for back up.					0		
1300	Okanogan County Elec Coop, Inc	Rather than asking question 39, a better question to ask is: "Would you appreciate being able to choose your source of electric energy? Conventional baseload sources such as hydro, natural gas or coal vs alternative sources such as wind, solar, geothermal or biomass." I save energy by turning off lights when not in use, taking less showers or baths, doing less laundry, hanging clothes instead of using dryer (except towels), not having dishwasher, TV or many small appliances. Q6) Propane					0		
1301	Okanogan County Elec Coop, Inc	Regarding internet access-DSL from CenturyLink is a joke and the amount they charge for terrible service in Mazama is fraud! Can OCEC help? Fiber optic lines up LR Road? Q20) Refrigerator small apt, food freezer small, electric heater when gone during winter. Q23) Halogens. Q24) S-C N/A. Q25) N/A. Q26) Wish we could through Q34) No dishwasher. Q36) Not if HOT! where reports back to some where! Q39) Do these in Seattle.					0		
1302	Okanogan County Elec Coop, Inc	Regarding primary heating equipment, (question #9). Try to use wood burning stove as primary. Have propane space heater in basement heat. Have old baseboard electric heat used as backup when necessary, and to prevent house freezing when absent from house while traveling.	Rick Rottman	44 Larkspur Dr.	Winthrop	98862		rottman.rick@gmail.com	
1303	Okanogan County Elec Coop, Inc	Residence is part-time second home but used year-round. Property address is not mailing address 7303 259th Pl NE Redmond, WA 98053	Claus Giloi	11 Green Meadows Dr.	Winthrop, WA	98862	4252415036	clausgiloi@comcast.net	
1304	Okanogan County Elec Coop, Inc	Sale pending on my home. Q41) My home is on the market for sale.	Ernestine (Tina) Heath	18874 St Rte 20	Winthrop	98862	509962415	heathvalley@mhwheel.com	
1305	Okanogan County Elec Coop, Inc	Since I am a "seasonal" resident, some of the economics of ideas in this survey are not so important, but if I was a full time resident I would be much more interested in solar, monitoring consumption, etc. Thank to COOP for conducting this survey.	David Petre	2805 NW Golden Dr	Seattle	98117	2067550146	david.allen.petre@gmail.com	
1306	Okanogan County Elec Coop, Inc	So far the last 3 years we have lived in a 26' travel trailer under a 16x30 pole building. We plan to enclose it next year to become our residence. We renovated 12x12 bathroom 2 yrs. ago that will attach to 16x30 home. We use propane to heat the trailer & electric to heat bathroom. We will install a propane fireplace in cabin. Thank you.					0		
1307	Okanogan County Elec Coop, Inc	Sold the place	Kim Roosma	8515 Stein Rd	Custer, WA	98240	3603664803	kdh_m@hotmail.com	
1308	Okanogan County Elec Coop, Inc	Sorry this is late. We were on a trip!					0		
1309	Okanogan County Elec Coop, Inc	Thank you for all you do!	Charles Butler				2067158531		
1310	Okanogan County Elec Coop, Inc	Thanks for looking into this. My last comment is please use whatever weight/capabilities you have to advocate against repowering Enloe Dam. A terrible investment w/ no ecological benefit. Pull it down and clean up the mess. Q7) Basic Century Link, not positive that's fiber optic; Q25) Bull house w/ nice walls & insulation	John Box				5034597196		
1311	Okanogan County Elec Coop, Inc	The place is only occupied a few days a year so panels etc. would not be worth the expense					0		
1312	Okanogan County Elec Coop, Inc	The survey questions 27 & 28 don't offer an option of having Solar already. You guys ROCK! Thank you! Q27) I have solar; Q28) I have solar	Janice Dickinson	345-B Rendezvous Rd	Winthrop	98862	9568208	winthropfitness@gmail.com	
1313	Okanogan County Elec Coop, Inc	This applies to property owned at 4 Nellis Place Mezonila, WA.	Bruce Gustavson	3951 Prinney N	Seattle	98103	2065109573	ogus@gk-irs.com	
1314	Okanogan County Elec Coop, Inc	This is a cabin used from May to October. Wood stove used only first day in Spring and Fall after cabin warm-electric heater. Most of the summer heat not needed. Occasionally a family will use in the winter for a short time. My answers reflect the fact that it is an old cabin-not my primary residence. Q1 box 3) Cabin; Q30) & additional family	Darla Heimdahl	11807 NE 69th Pl.	Kirkland, WA	98033		dar.rog@comcast.net	
1315	Okanogan County Elec Coop, Inc	Too many employees, too many new trucks, cost of new power installs is too high. The cost is marking items up too much. Q13) N/A none. Q24, 25) None. Q26) Do not want them.					0		
1316	Okanogan County Elec Coop, Inc	Very disappointed, Coop doesn't support 1631.					0		
1317	Okanogan County Elec Coop, Inc	We already have installed solar panels on the roof of our shed. They do a pretty good job at supplying enough energy during summer months.					0		
1318	Okanogan County Elec Coop, Inc	We are "Weekenders" and by circumstance our "skin" in the game is not the same as permanent residents. Faced with very serious concerns we would likely select to move rather than feed the money RT. Cheaper energy in the area is also obtained by increasing the customers/recipients. To in pud on modified vice versa because geography limitations. Q34, 35) Already have.	The Whitzombs	178 Leaf Creek Rd	Winthrop	98862	2063993419	whitzomb@gmail.com	
1319	Okanogan County Elec Coop, Inc	We are actively going to pursue solar installation in 2019	Joan Wellman	865 Wolf Creek Rd	Winthrop		0		
1320	Okanogan County Elec Coop, Inc	We believe in data privacy and security, so we don't use so-called smart technology, although we recognize that it is reported to save energy.	Danny			98862	6178526731	danny.koskikarell@gmail.com	
1321	Okanogan County Elec Coop, Inc	We had solar panels and they were a pain!					0		
1322	Okanogan County Elec Coop, Inc	We have a kw solar array & solar water heating panels to save electricity. Our home is an earth sheltered passive solar construction.	Howard Cherrington	3 Myer G. Rd./P.O. Box 681	Twisp	98856	5099972289	cherrington@centurylink.net	
1323	Okanogan County Elec Coop, Inc	We have just remodeled our home - and are hoping for more energy savings - and hopefully, future solar installations. Q41) 2-5 years Q43) I don't get them - but will	Dana Milani	P.O. Box 1222	Winthrop	98862		denamiani3@gmail.com	
1324	Okanogan County Elec Coop, Inc	We investigated solar at one point. Would consider it in future.					0		
1325	Okanogan County Elec Coop, Inc	We live in the shadow of Patterson Mt., limiting our sun exposure in the winter time. It would be an advantage to have a solar panel for the well pump. Q40) Also a 4 wheel drive.					0		
1326	Okanogan County Elec Coop, Inc	We rent the house, so don't know all the information.					0		
1327	Okanogan County Elec Coop, Inc	We'd like to see more incentives to install solar panels and increase insulation and weather sealing in homes.	Katharine Bill	27 W. Fawn Cr. Rd.	Winthrop, WA	98862	3414210	stella@methownet.com	
1328	Okanogan County Elec Coop, Inc	What does the base charge cover? Why do we have to pay for that on top of the amount for the electricity?	Samantha Huntsman	6 Rising Eagle	Twisp WA	98856	2535928322	alwaysbaking@hotmail.com	
1329	Okanogan County Elec Coop, Inc	Who is doing this survey for my co-op and why didn't you identify yourself?					0		
1330	Okanogan County Elec Coop, Inc	Would like OCEC to have more active cooperation with IDA to maintain our Dark Skies. Strict utility ordinances. More rebate programs available for solar and energy efficient appliances, windows, insulation, heaters, etc.					0		
1331	Okanogan County Elec Coop, Inc	Would like solar for emergency but at my age (75) don't know if it's worth the expense.	Tom Orcutt	494 Rendezvous	Winthrop	98862	9564415	staggerbeevh@gmail.com	



2018 RESIDENTIAL END-USE SURVEY RESULTS

TO SUPPORT LOAD FORECASTING
AND CONSERVATION PLANNING

PREPARED FOR:

PNGC POWER

PORTLAND, OREGON

PREPARED BY:

CLEARSPRING ENERGY ADVISORS

MADISON, WISCONSIN

JANUARY 2019



Clearspring
Energy
Advisors LLC



CONFIDENTIAL INFORMATION

The information contained in this report is considered confidential and is for the sole use of PNGC Power management, staff, its Board of Directors, and for internal use by its member systems. The information may not be copied, distributed, or summarized for other parties without the consent of PNGC Power.

2018 Residential End-Use Survey Results

Prepared for:

PNGC Power
Portland, Oregon

Respectfully submitted,



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January 2019



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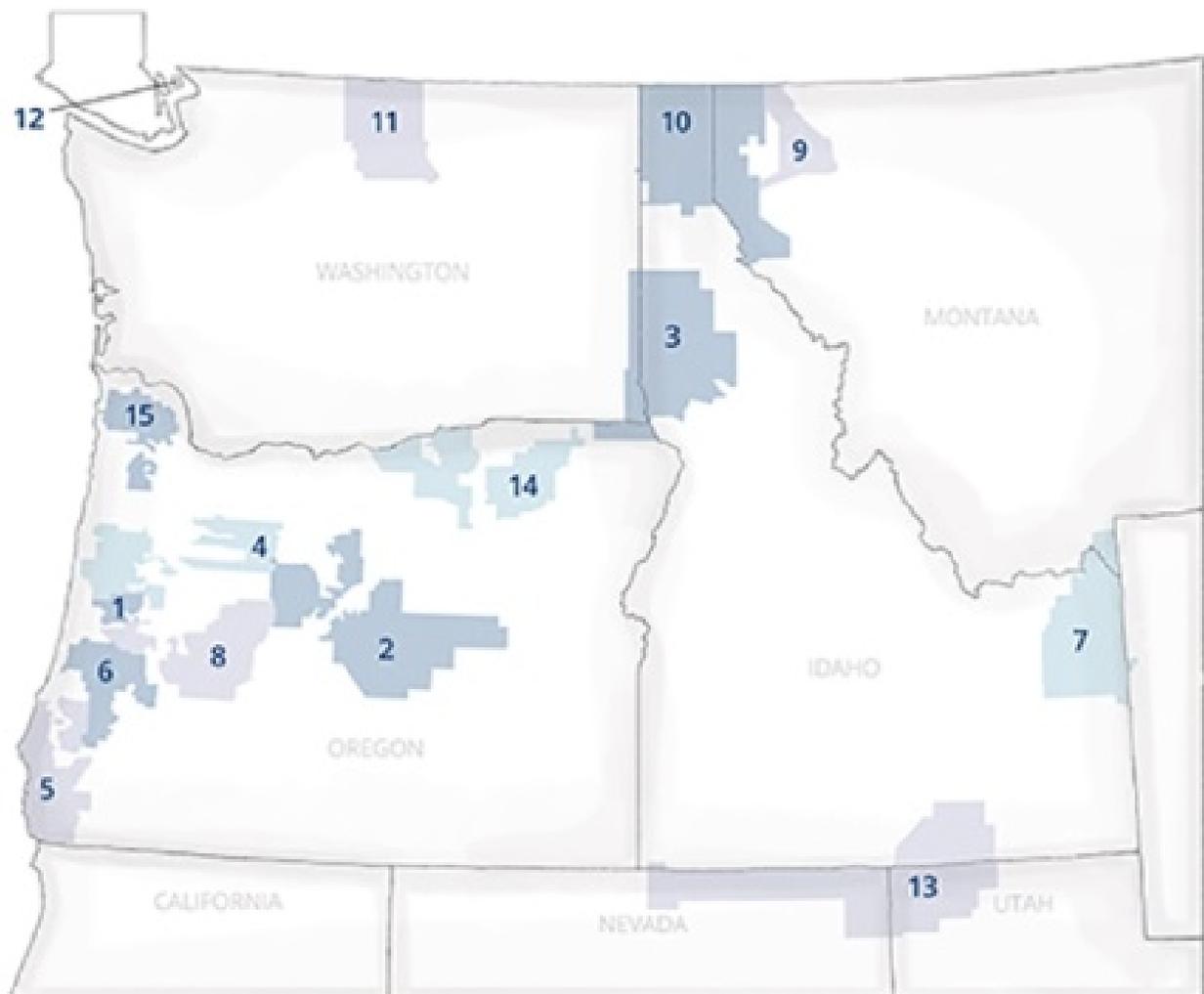
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Appendix A: 2018 Survey Instrument

Appendix B: PNGC-Weighted Frequency Tables

PNGC Member Systems

1. Blachly-Lane Electric Cooperative, OR
2. Central Electric Cooperative, OR
3. Clearwater Power Company, ID
4. Consumers Power Inc., OR
5. Coos-Curry Electric Cooperative, OR
6. Douglas Electric Cooperative, OR
7. Fall River Rural Electric Cooperative, ID
8. Lane Electric Cooperative, OR
9. Lincoln Electric Cooperative, MT
10. Northern Lights Inc., ID
11. Okanogan County Electric Cooperative, WA
12. Orcas Power & Light Cooperative, WA
13. Raft River Rural Electric Cooperative, ID
14. Umatilla Electric Cooperative, OR
15. West Oregon Electric Cooperative, OR



Executive Summary

PNGC Power provides load forecasting and energy conservation planning services on behalf of its 15 member distribution cooperatives. To support these efforts, PNGC Power regularly conducts surveys of the residential customers of its member systems to gain information about their homes, appliances, energy use habits, and opinions about energy issues. This report summarizes the findings of the 2018 residential end-use survey, summarizing results from over 5,000 responses received.

Key findings of the 2018 residential end-use survey include:

- Over 70 percent of residential accounts serve a year-round home without a farm, 13 percent of accounts include a farm, and 14 percent serve seasonal dwellings. This composition has remained relatively stable across the five surveys since 2010.
- The average size of new homes has remained relatively stable over the past decade, following steady increases for several decades. New homes are more likely to have access to natural gas and to have heat pump space heating and cooling compared to the existing housing stock.
- Electricity remains the dominant space heating fuel, used by 60 percent of respondents. Electric heat saturations are supported by increasing popularity of ductless heat pumps.
- Approximately 60 percent of homes have air conditioning, a moderate increase from 54 percent in the 2010 survey. Heat pumps are the most common cooling equipment, including strong recent growth in ductless systems.
- More than 80 percent of homes use electricity for water heating, including five percent with heat pump water heaters. The saturation of electric water heaters has been relatively stable.
- The share of homes with an electric range/oven has declined slowly but steadily since 2010. The total saturation of electric ovens is 76 percent, but it is only 58 percent in new homes.
- The shares of homes with high-efficiency clothes washers, CFL and LED lighting, LED televisions, and high-speed Internet service are all increasing, reflecting market transformations and technology changes. LED lighting is now as common as incandescent lighting.
- Slightly over ten percent of respondents are strongly or somewhat considering installation of solar panels on their property in the next two years, while 22 percent indicated some interest in community solar participation. These are down slightly since the 2016 survey.
- The decision to install solar panels is very sensitive to installation cost. Nearly one-fourth of respondents were “somewhat” or “very” likely to install solar panels for \$10,000, but this decreases to only five percent at a cost of \$20,000. Decreasing their electric bill is the strongest motivator for respondents to install solar panels at their residence.

Detailed results of the 2018 survey and comparisons with previous surveys are provided in this report.

Survey Process

PNGC Power conducted a mail survey in the fall of 2018 across a randomly-selected sample of residential customers served by its 15 member distribution cooperatives. The survey captured information about residential building characteristics, appliance holdings, conservation measures, interest in on-site generation, opinions about energy use and policy, and basic demographic data.

Information collected in this survey is primarily intended to support PNGC's energy conservation and load forecasting efforts, along with financial evaluations, marketing efforts, and strategic planning. Regular surveying provides insights into key changes in appliance holdings, the housing stock, customer attitudes, emerging technologies, customer attitudes, and other drivers of energy use. The current survey updates much of the information captured in previous surveys conducted in 2010, 2013, 2014, and 2016. A copy of the 2018 questionnaire is included in Appendix A.

PNGC Power contracted with Clearspring Energy Advisors of Madison, Wisconsin to coordinate and manage the survey project, including development of the survey instrument, mailing and data entry, survey data analysis, and reporting of results. Clearspring Energy has substantial experience conducting similar surveys, including previous PNGC residential end-use surveys.

Coordination and Responsibilities

A project of this magnitude requires close coordination between the power supplier, the member systems, and the consultant managing the project. The primary responsible parties at PNGC Power are the Vice President of Power Supply and the Senior Power Analyst. The primary responsible parties at Clearspring Energy are the Principal Consultant and the Research Director. This section briefly describes the project coordination and responsibilities.

In the project planning phase, Clearspring Energy and PNGC Power discussed the primary objectives of the survey, the timing of the survey and data needs, key responsibilities, and project coordination. The project scope, timeline, and responsibilities were developed based on those discussions.

Clearspring Energy developed a draft survey instrument based on the project objectives and provided it to PNGC for review and comment. Clearspring Energy provided guidance regarding collection of member databases, randomly selected the survey recipients, and statistically verified the sample. It also coordinated all printing, mailing, and data entry efforts. Clearspring Energy performed all data coding and cleaning, statistical analyses, response summaries, and reporting of results. Clearspring Energy also distributed member-specific summary results to each PNGC member cooperative along with a copy of this PNGC report.

PNGC coordinated collection of residential customer databases from its member systems including electricity consumption data over the July 2017 to June 2018 period. PNGC also reviewed the draft survey instrument and provided comments and revisions to Clearspring Energy. PNGC provided feedback on the preliminary survey analysis, draft report, and draft member summary template.

Survey Mailing and Response

A total of 19,600 survey packets were mailed to randomly-selected residential customers in September 2018. The numbers of questionnaires sent for each cooperative were based on the number of responses needed to meet statistical criteria and the response rates from the previous (2016) survey. The sample size with assumed response rates were designed to provide statistically-valid results at the 95% probability level with a confidence interval of $\pm 5.0\%$ for each member cooperative.

Recipients were provided with a postage-paid business reply mail envelope in which to return the completed questionnaires to the survey consultant. A total of 5,151 completed questionnaires were returned by the survey cut-off date¹, yielding a “gross” response rate of 26.3 percent². As is true with similar surveys in other parts of the country, response rates have declined in recent surveys.

The number of surveys mailed, responses, response rates, and statistical confidence intervals by cooperative are presented in the following table.

PNGC 2018 Survey Counts, Response Rates, and Confidence Intervals					
Cooperative	Population Estimate*	Surveys Mailed	Survey Responses	Response Rate	**Confidence Interval +/-
Blachly-Lane Electric Cooperative	3,092	1,200	337	28.1%	5.0%
Central Electric Cooperative	28,300	1,300	331	25.5%	5.4%
Clearwater Power Company	9,793	1,100	389	35.4%	4.9%
Consumers Power, Inc	18,766	1,500	320	21.3%	5.4%
Coos-Curry Electric Coop, Inc	17,085	1,400	380	27.1%	5.0%
Douglas Electric Cooperative	6,823	1,200	332	27.7%	5.2%
Fall River Rural Elec Coop Inc	12,732	1,300	330	25.4%	5.3%
Lane Electric Coop Inc	9,378	1,500	397	26.5%	4.8%
Lincoln Electric Cooperative	4,259	1,000	347	34.7%	5.0%
Northern Lights, Inc	12,935	1,200	312	26.0%	5.5%
Okanogan County Elec Coop, Inc	3,162	1,000	387	38.7%	4.7%
Raft River Rural Electric Cooperative	2,553	1,500	295	19.7%	5.4%
Umatilla Electric Cooperative	9,553	1,500	255	17.0%	6.0%
West Oregon Electric Cooperative	4,106	1,400	324	23.1%	5.2%
Orcas Power & Light Cooperative	11,213	1,500	409	27.3%	4.8%
Identification removed			6		
PNGC TOTAL	153,750	19,600	5,151	26.3%	1.3%
* Unique residential consumer counts from the customer databases					
** The confidence interval represents the statistical uncertainty around the aggregate responses at the 95th percentile confidence level. That is, the survey results should lie within this interval of the actual data for the entire population 19 times in 20.					

Aggregate results at the PNGC level are available with a confidence interval of ± 1.3 percent, while results for individual member cooperatives are available with confidence intervals ranging from ± 4.7 to ± 6.0 percent. These confidence intervals are valid for aggregate results from questions with a complete set of responses. Questions with a partial set of responses or within sub-categories would have somewhat broader confidence intervals.

¹ At least 40 additional surveys were received after data processing, and are not included in this total

² Excluding 259 undeliverable surveys, the “net” response rate is $5,151/(19,600-259)=26.6\%$

Data Analysis

The survey responses were entered into SPSS³ software and the response categories were coded and labeled. SPSS databases were formatted, cleaned, and verified prior to the data analysis. Data regarding account information, including electricity consumption, were merged with the survey results using the unique survey identifiers printed on each questionnaire. Note that six survey responses were returned with identification removed. These responses are included with the PNGC totals, but not within the cooperative-specific results.

The survey data was evaluated using techniques in SPSS including frequency tables, cross-tabulations, and means functions. PNGC-level results were weighted based on the number of survey responses for each cooperative and the population size for each cooperative. In this manner, the weighted PNGC results are representative of the PNGC residential class as a whole. The weighting calculation is detailed in the following table.

PNGC 2018 Survey Count and Cooperative Weighting						
Cooperative	Population Estimate*	Population Percentage	Survey Count	Survey Percentage	Weight	
1 Blachly-Lane Electric Cooperative	3,092	2.0%	337	6.5%	0.307	
2 Central Electric Cooperative	28,300	18.4%	331	6.4%	2.864	
3 Clearwater Power Company	9,793	6.4%	389	7.6%	0.843	
4 Consumers Power, Inc	18,766	12.2%	320	6.2%	1.965	
5 Coos-Curry Electric Coop, Inc	17,085	11.1%	380	7.4%	1.506	
6 Douglas Electric Cooperative	6,823	4.4%	332	6.4%	0.689	
7 Fall River Rural Elec Coop Inc	12,732	8.3%	330	6.4%	1.293	
8 Lane Electric Coop Inc	9,378	6.1%	397	7.7%	0.791	
9 Lincoln Electric Cooperative	4,259	2.8%	347	6.7%	0.411	
10 Northern Lights, Inc	12,935	8.4%	312	6.1%	1.389	
11 Okanogan County Elec Coop, Inc	3,162	2.1%	387	7.5%	0.274	
12 Raft River Rural Electric Cooperative	2,553	1.7%	295	5.7%	0.290	
13 Umatilla Electric Cooperative	9,553	6.2%	255	5.0%	1.255	
14 West Oregon Electric Cooperative	4,106	2.7%	324	6.3%	0.425	
15 Orcas Power & Light Cooperative	<u>11,213</u>	<u>7.3%</u>	409	7.9%	0.918	
Identification removed			<u>6</u>	<u>0.1%</u>	1.000	
TOTAL	153,750	100%	5,151	100%		

* Residential consumer counts from the customer databases

³ Statistical Package for the Social Scientist (www-01.ibm.com/software/analytics/spss/)



Survey Results

The following sections present the results from the 2018 end-use survey. Comparisons to selected results from previous surveys are also included, where relevant, and statistically-significant trends or findings are discussed. Key results by cooperative are also presented to provide ranges and context. Note that the results are statistically valid within the confidence intervals discussed previously, which are ± 1.3 percent at the PNGC level and approximately ± 4.7 to ± 6.0 percent for member distribution cooperatives. Unless otherwise noted, the results represent PNGC system-level results which are weighted across the cooperatives.

Note that Orcas Power & Light Cooperative is included in the 2016 and 2018 PNGC averages, but was not a PNGC member in earlier surveys. This may have a small impact on the PNGC averages in cases where Orcas' characteristics are significantly different than the other 14 PNGC member systems. Those situations are noted in the text and evaluation.

Account and Home Characteristics

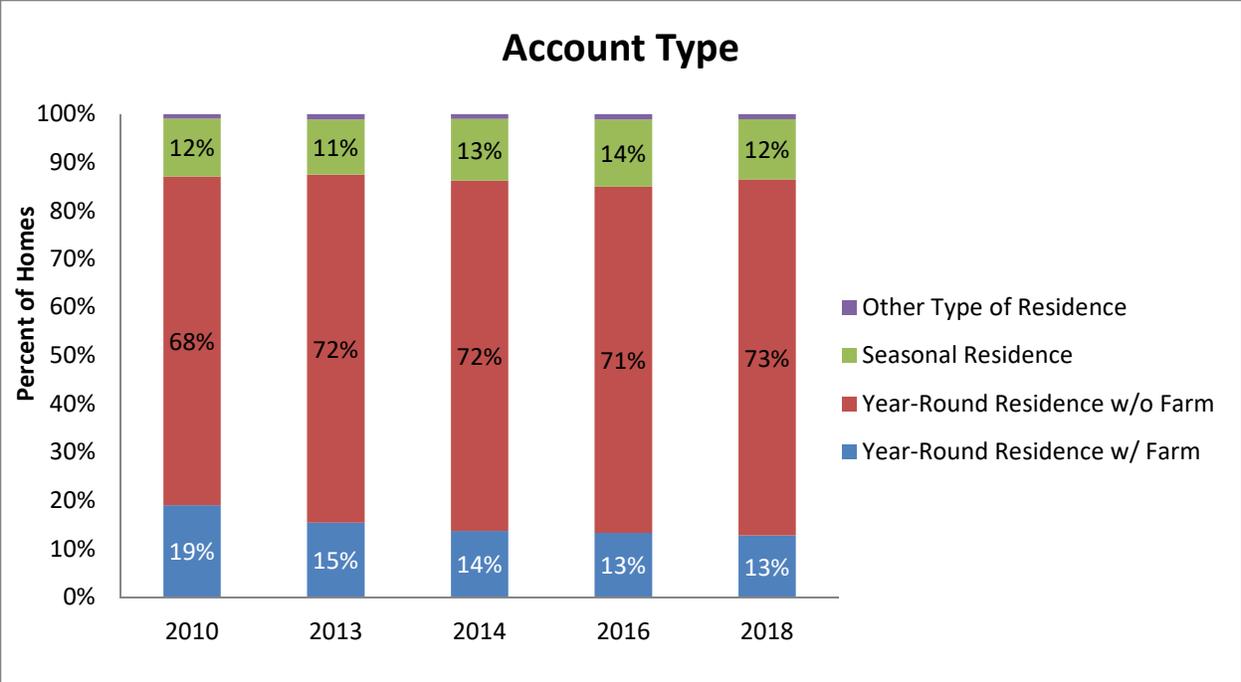
Account characteristics include key information about the type of account served, the characteristics of the dwelling, and general information about the residence. These attributes can impact energy consumption levels and trends, appliance ownership patterns, and the potential to target energy efficiency programs or products to consumers. Trends in account characteristics and correlations between annual kilowatt-hour (kWh) consumption and dwelling attributes are discussed in this section.

Nearly three-fourths of responses were from year-round residences without a farm, while approximately 13 percent of responses were from residences with a working farm⁴. These are similar to previous survey results. Approximately 12 percent of responses were from seasonal residences, many of which were concentrated in Fall River, Okanogan, and Orcas cooperatives⁵. While there appears to be a subtle shift away from homes with farms toward homes without farms, the term "working" farm was not included in the 2010 survey, thus causing some definitional change within the categories between the 2010 and subsequent surveys. The 2018 share of accounts with a farm has changed slightly since previous surveys, although the change is relatively small. The addition of Orcas to the 2016 survey moderately contributed to the apparent trend, since less than five percent of Orcas' respondents indicated that their account included a "working" farm.

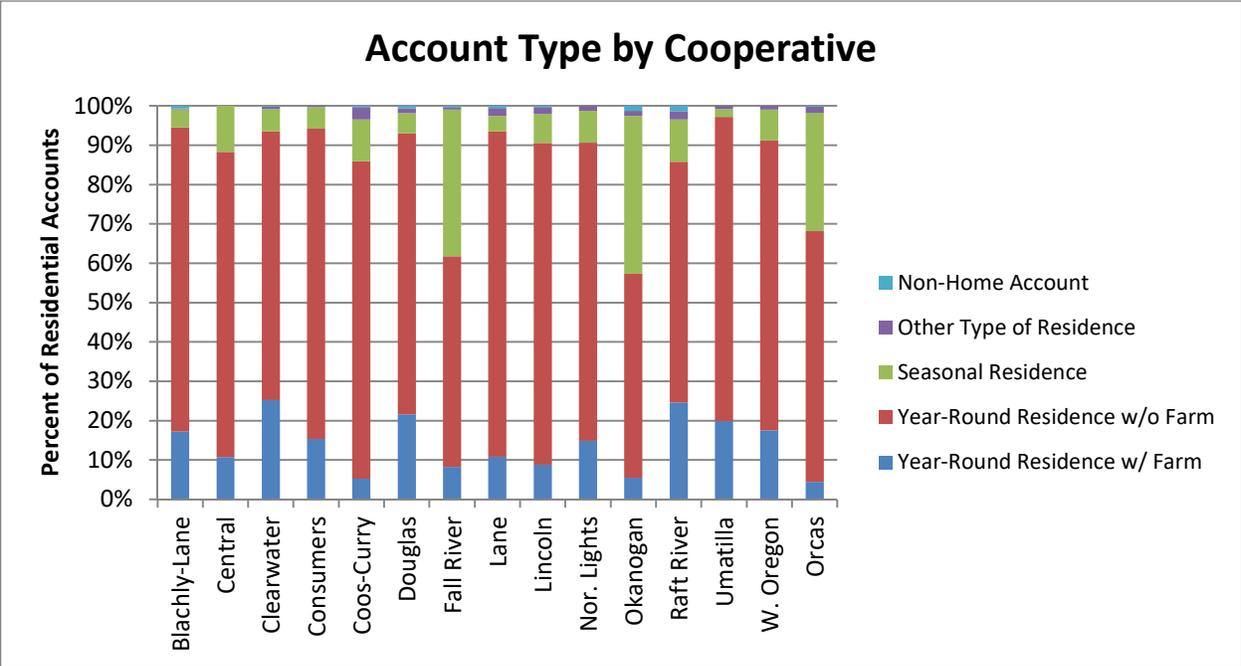
⁴ "Working farms" are self-defined by the respondent, but are intended to exclude smaller "hobby" farms.

⁵ Other cooperatives may also have high concentrations of seasonal homes, but those accounts are classified separately, and were not included in the residential databases from which the survey samples were drawn.

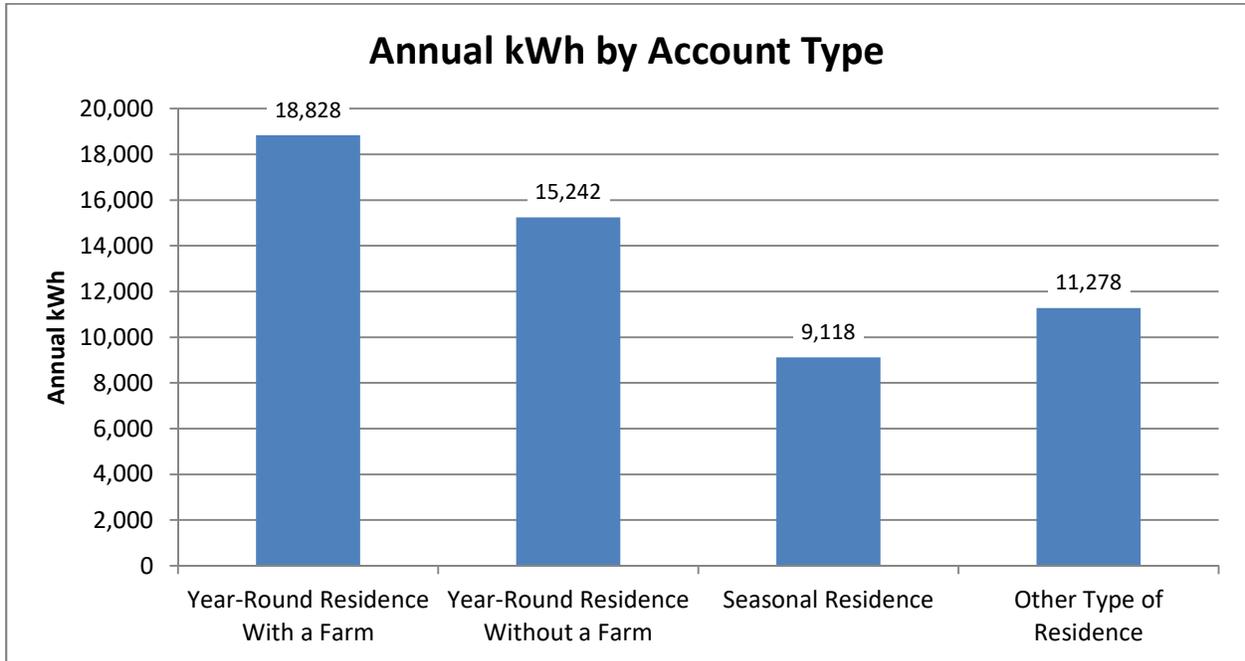




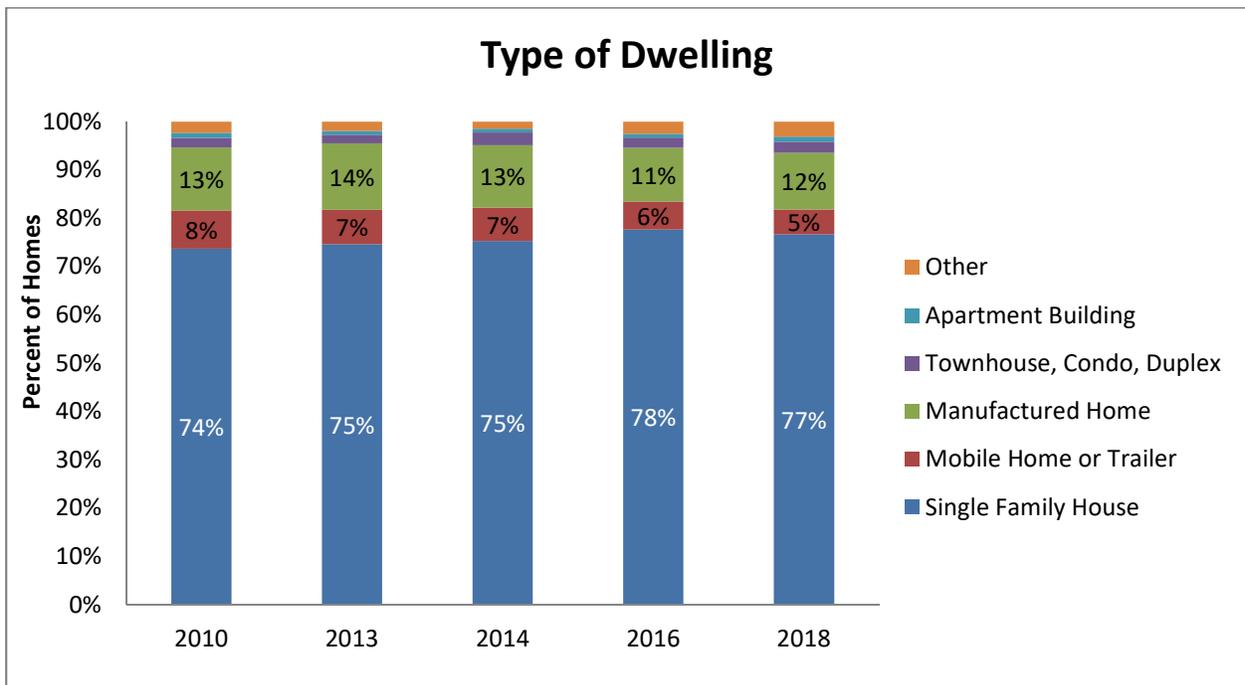
The diversity of residential account types across the PNGC member systems is illustrated in the following graph. The share of residential accounts with a farm ranged from four percent to 25 percent, while the share of residential accounts with a seasonal residence ranged from two percent to 40 percent. A small proportion of other types of residences or non-home accounts were also recorded, but they account for less than five percent of responses for any cooperative.



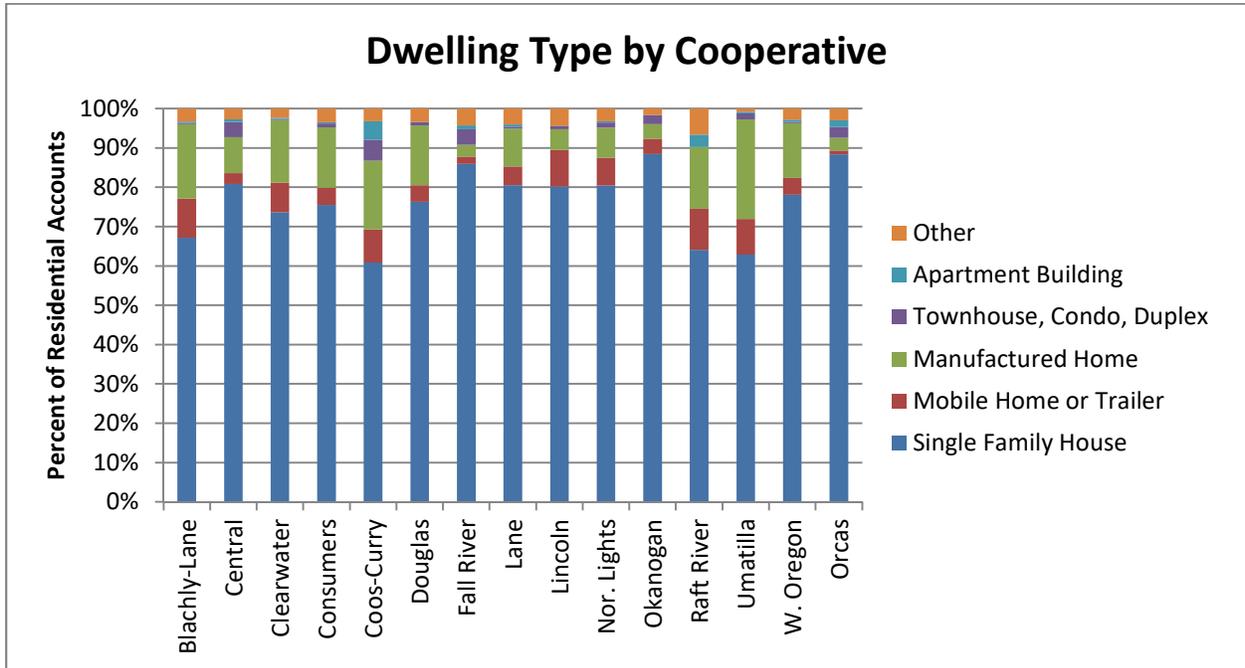
Year-round residences with a farm used about 25 percent more electricity than residences without a farm, on average. This is likely due to the farm-related energy uses, but may also be due to the fact that rural areas are unlikely to have access to natural gas and typically contain an older housing stock.



Over three-fourths of dwellings are single-family, non-mobile/manufactured, houses. Manufactured homes comprise approximately 12 percent of homes while mobile homes comprise five percent. There appears to be a subtle migration toward single-family houses across the five surveys.



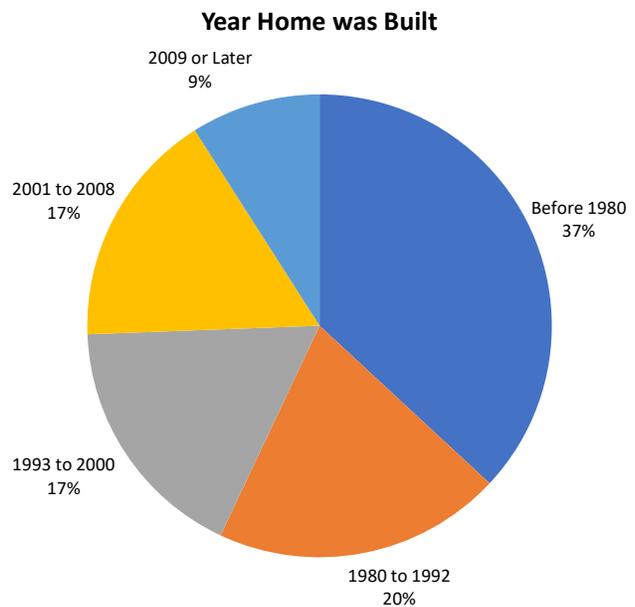
The share of single-family, non-mobile/manufactured dwellings ranged from 61 to 88 percent across PNGC’s member systems. Umatilla has more than 25 percent of manufactured homes while Raft River has over 10 percent mobile homes.



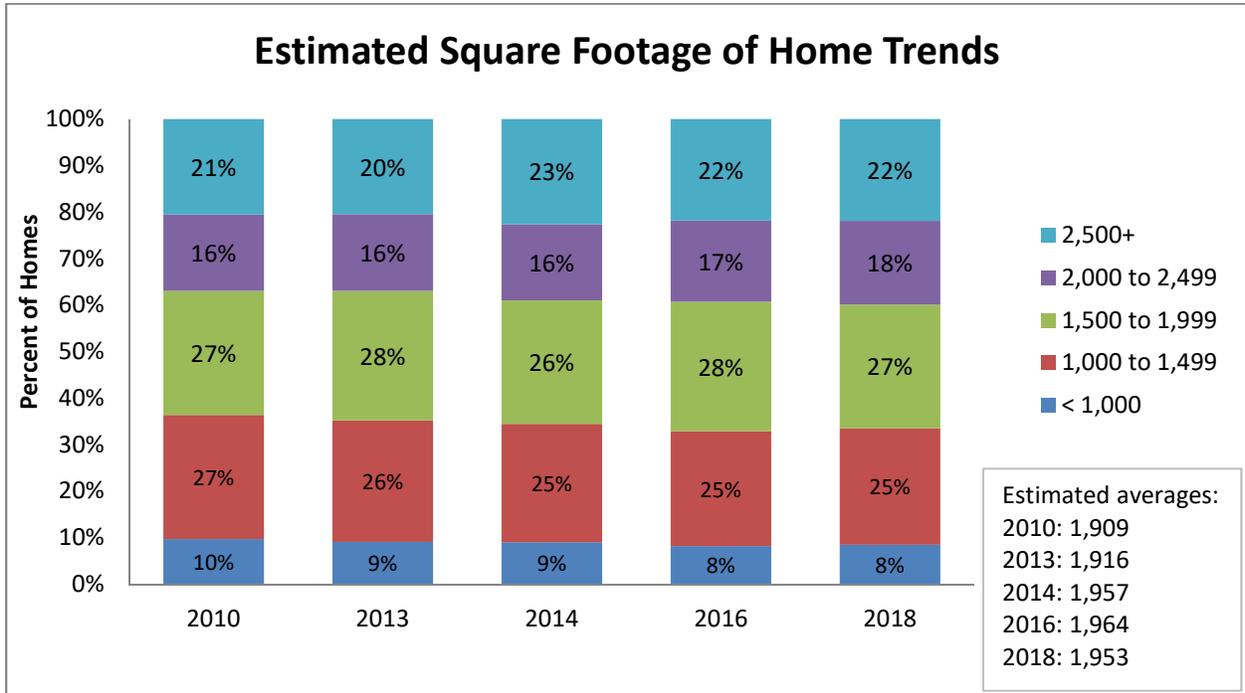
The sizes and ages of dwellings of homes provide basic characteristics that can identify trends and are correlated with energy consumption. Home size and age are summarized briefly and are correlated with other survey data in subsequent sections of this report.

The home vintage can influence energy use via the building shell efficiency or heating fuels common with homes at the time of construction. Approximately 37 percent of homes on the PNGC system were built before 1980. Correlations with kWh use are included later in this section.

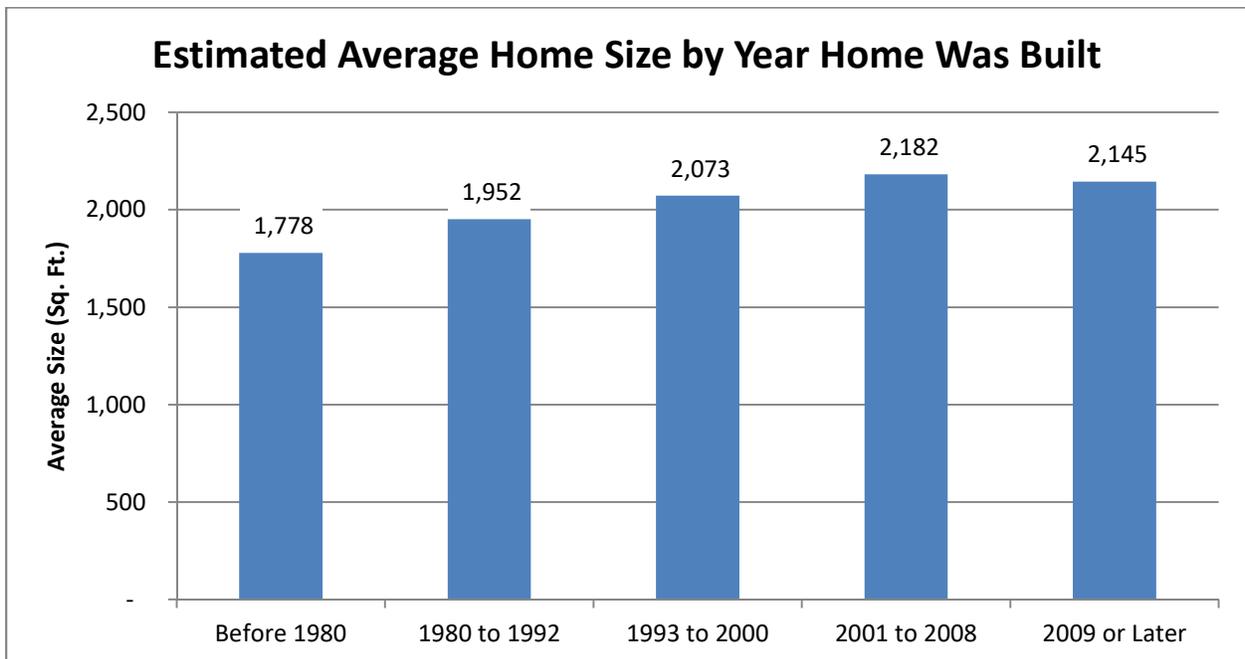
Less than ten percent of dwellings have been built during the last ten years (2009 to 2018), while 17 percent were built during the previous eight years during the “housing boom” period of 2001 to 2008 and the 17 percent build during the 1993 to 2000 period. The substantial slowdown in new home construction has influenced economic growth, electric load growth, and the pace of replacement of the existing housing stock.



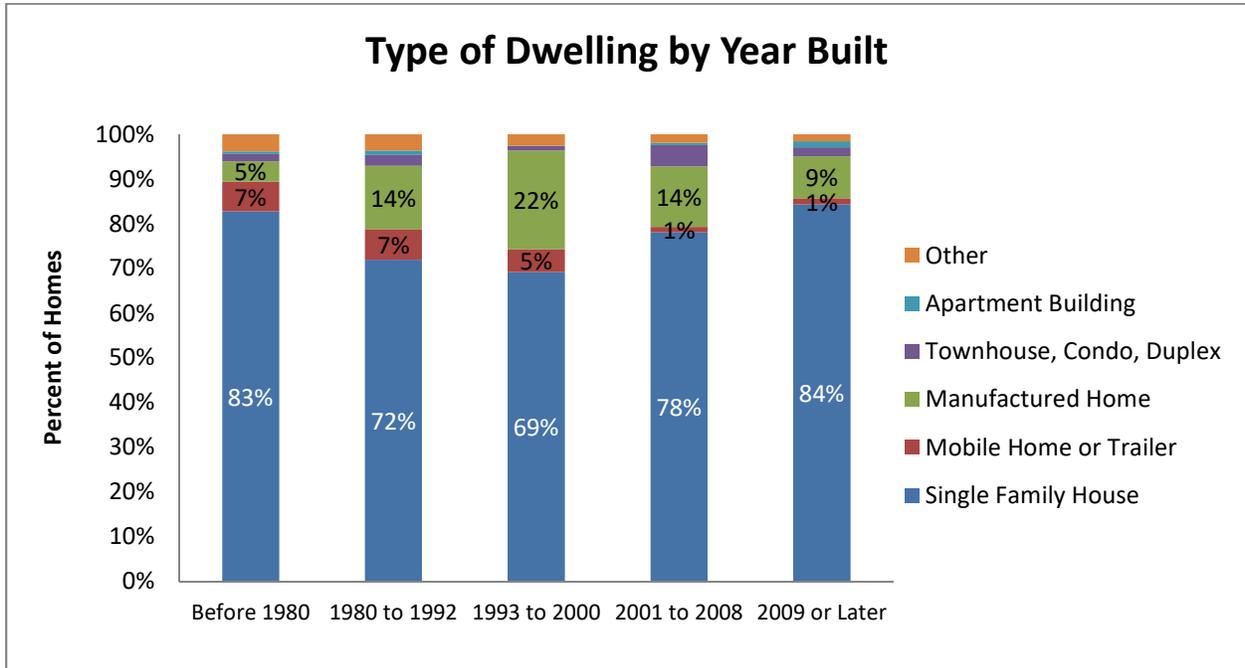
The size of the average home had increased for many decades as new homes were larger than the existing stock and existing homes were remodeled and expanded. This trend appears to have slowed. The average home's square footage has not changed significantly in recent surveys.



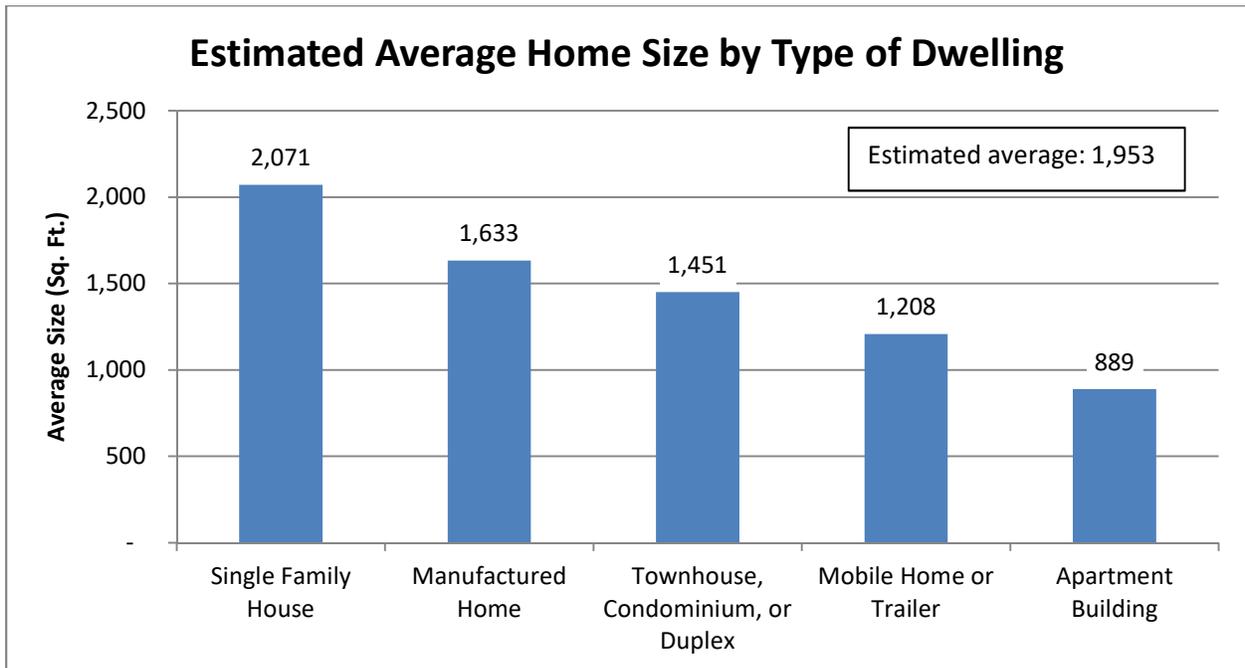
The trend toward larger homes being built appears to have stalled following the housing market crash and Great Recession. Dwellings built after 2008 have been the same size or slightly smaller, on average, than homes built during the height of the housing boom from 2001 to 2008.



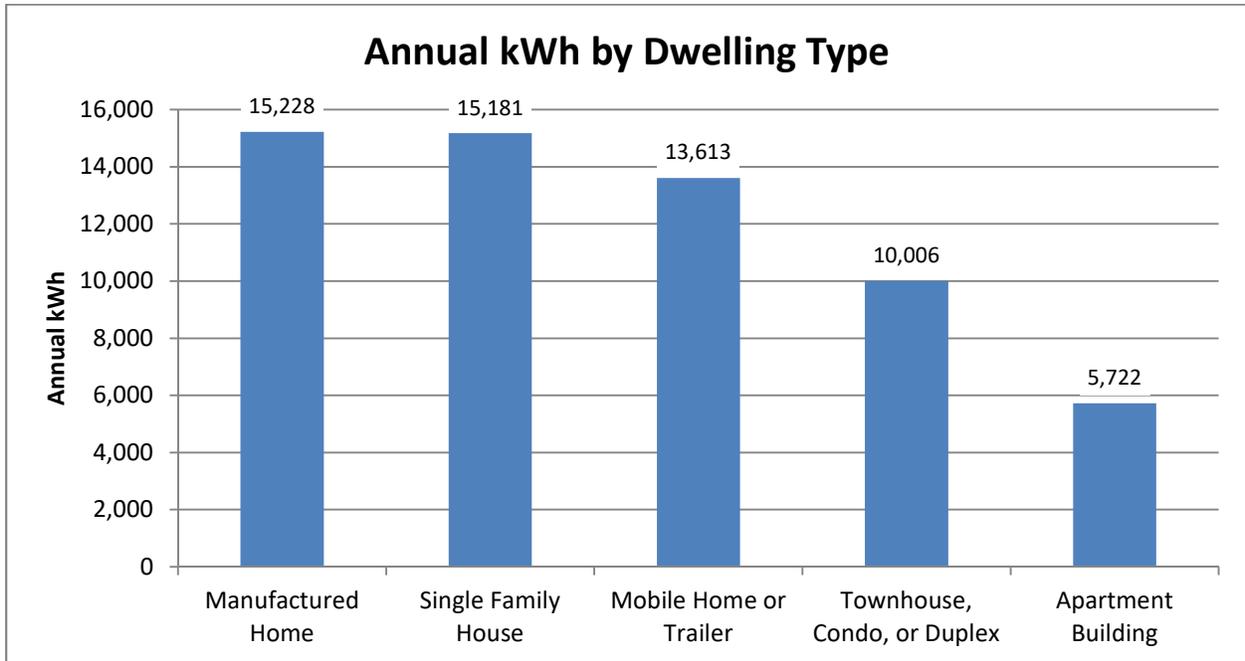
There appears to have been a surge of manufactured home construction in the 1993 to 2000 period, exceeding 20 percent of new homes. The share of both manufactured and mobile homes has decreased over the past two decades.



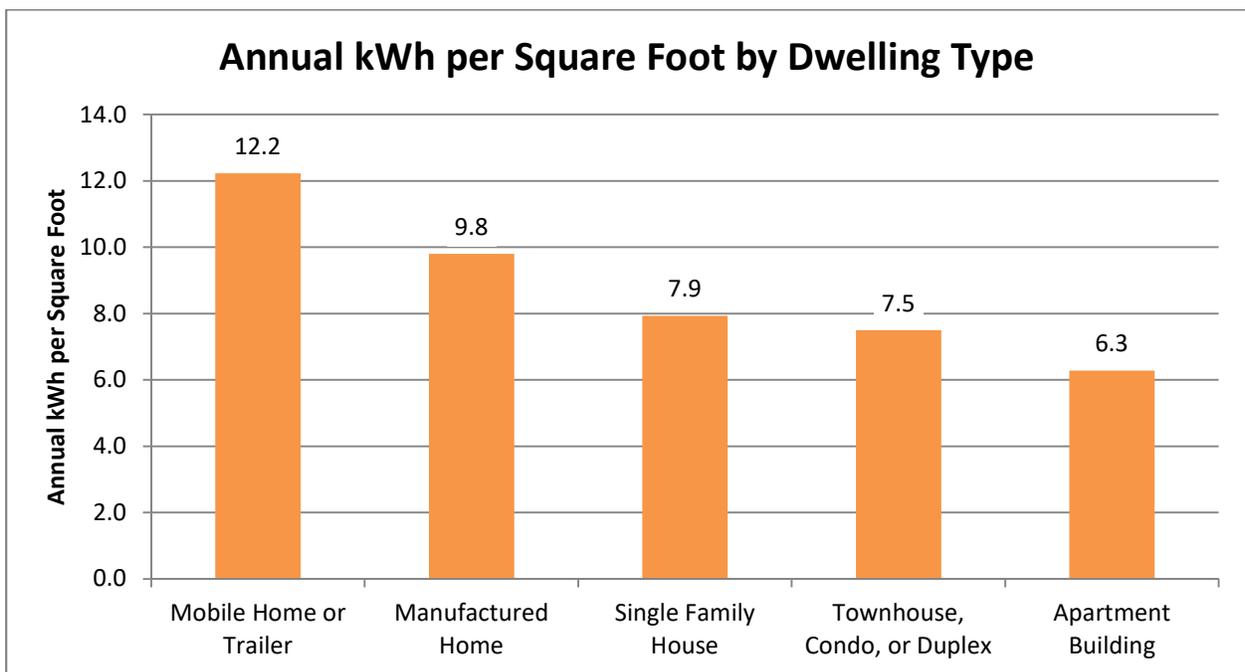
Single-family houses tend to be larger than other dwelling types, averaging over 2,000 square feet. Mobile homes and apartments are roughly one-half the size of a single-family house, on average.



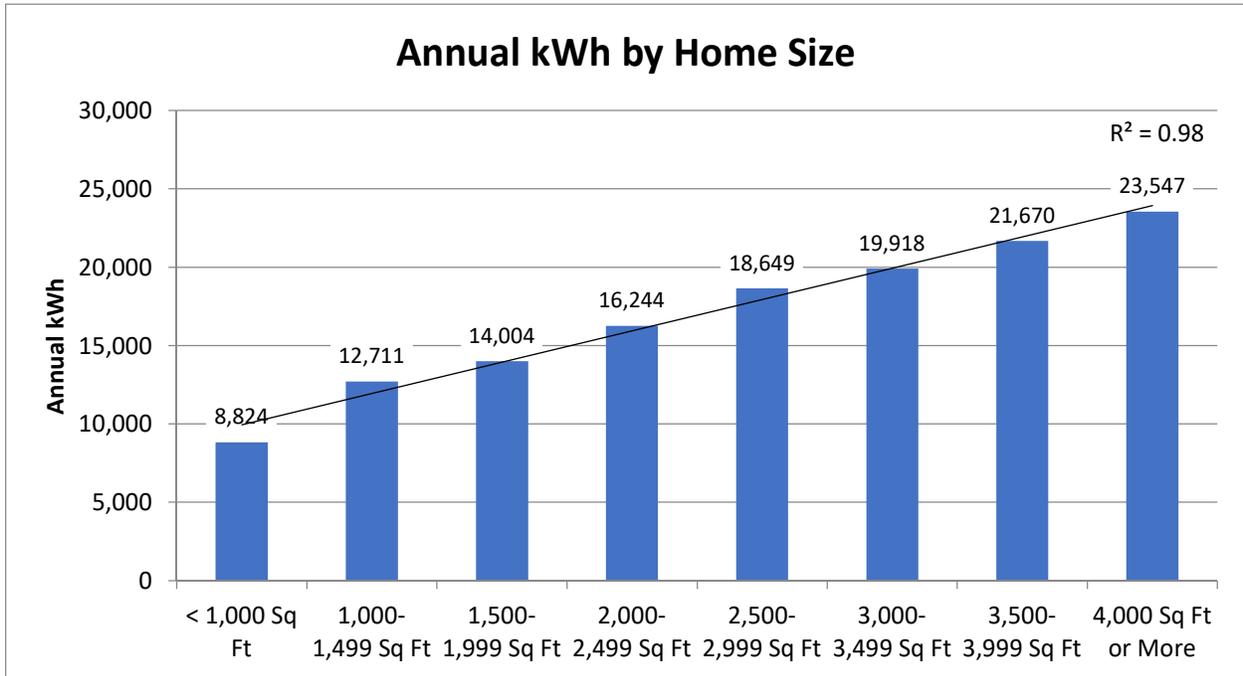
Although single-family houses tend to be larger in size than other dwelling types, their electricity consumption is similar to mobile and manufactured homes. This is likely due to a combination of the appliance equipment stock, the fuel choices for heating and water heating, and the insulation properties of the building envelope.



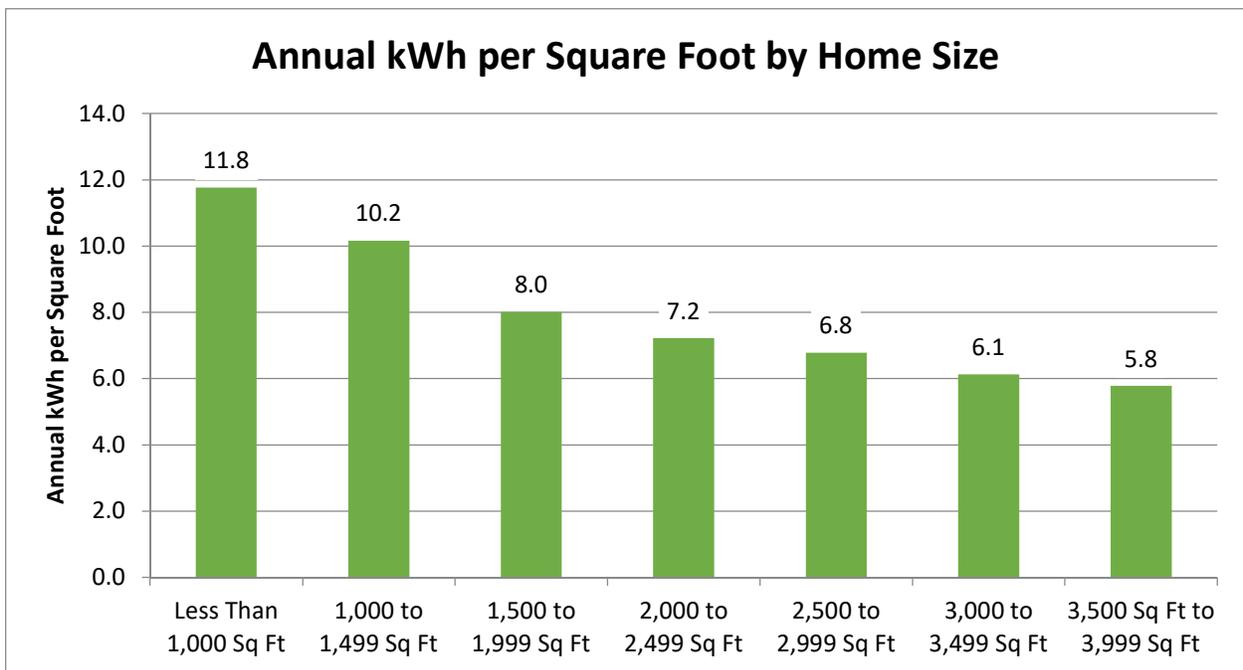
On a *per square foot basis*, mobile homes use more electricity than other dwelling types. This is likely driven by less insulation and greater saturations of electric appliances.



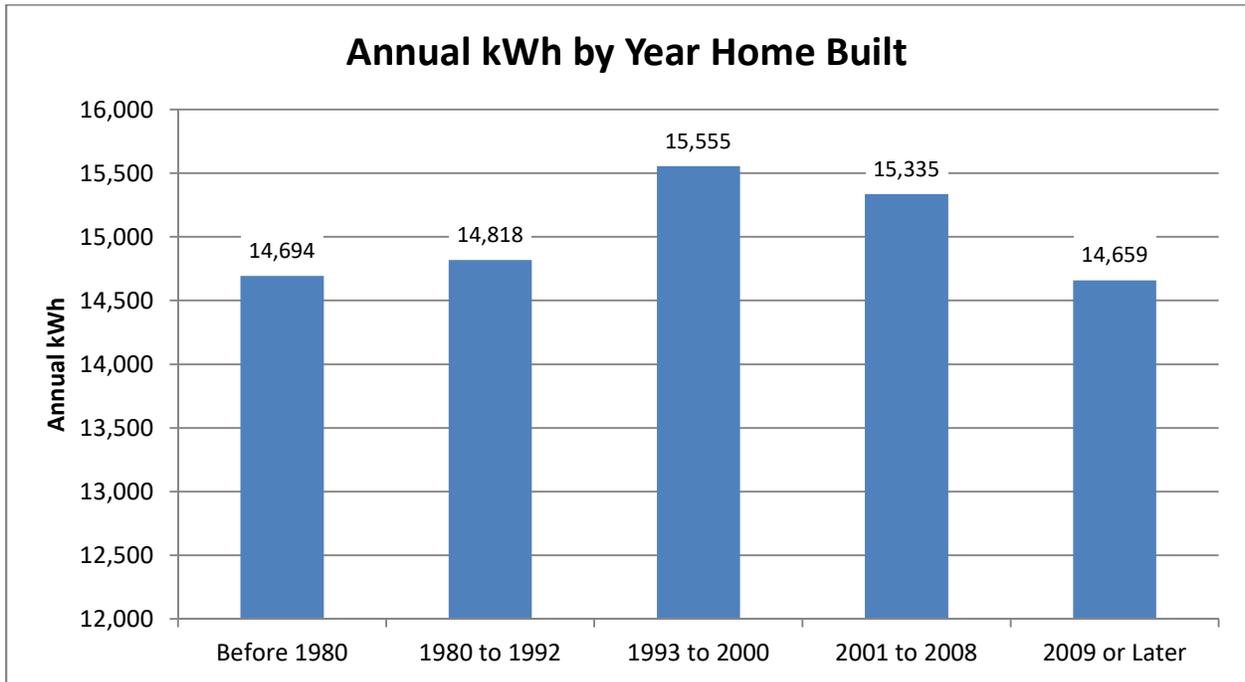
The size of the home is strongly correlated with average electricity consumption. As shown in the following graph, homes smaller than 1,000 square feet use roughly 9,000 kWh annually (on average), while homes larger than 3,000 square feet use more than 20,000 kWh annually, on average.



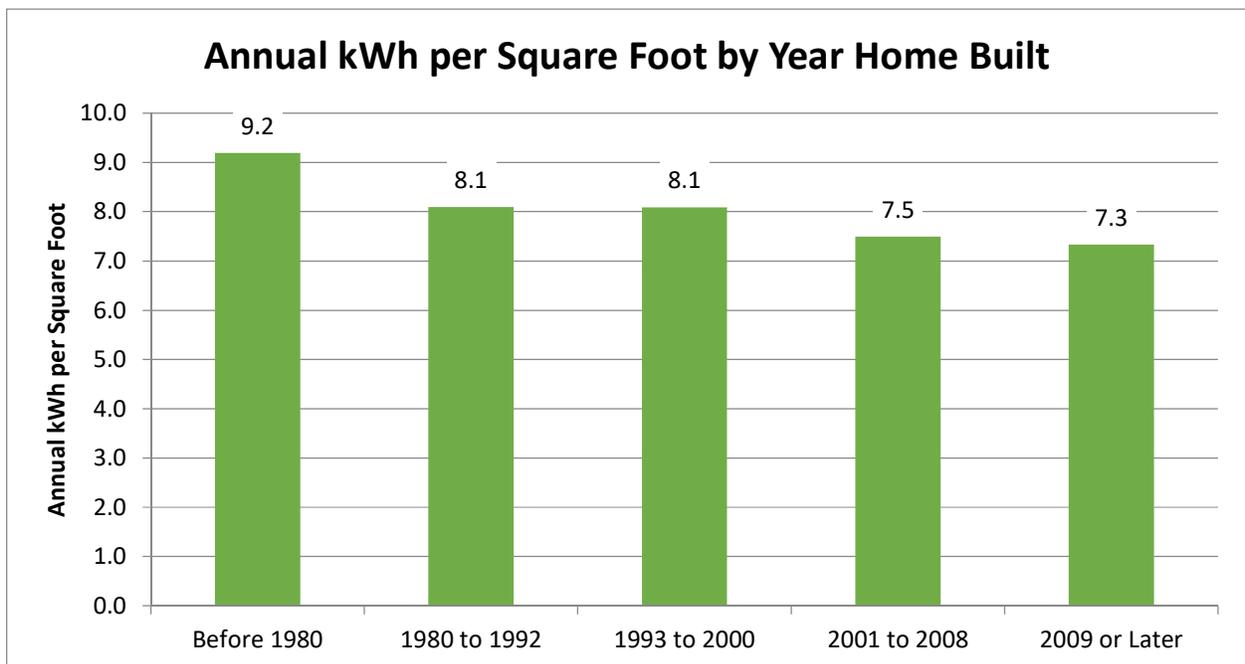
Average electricity consumption *per-square-foot* exhibits a moderate *inverse* relationship with home size. While some electricity uses such as heating and cooling are directly correlated to the home’s volume, many uses are more directly correlated to other factors such as occupancy.



An analysis of electricity use by the home vintage shows that homes of different ages seem to use similar amounts of electricity, with a variation of less than 1,000 annual kWh between any vintages.



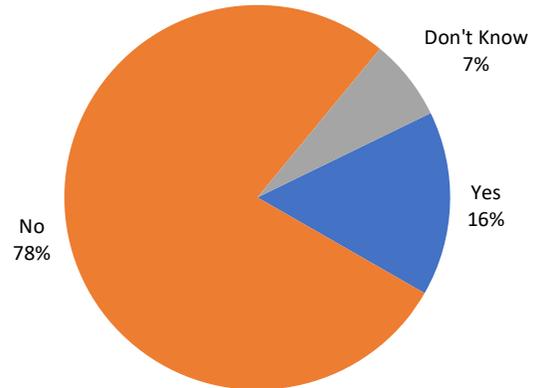
Adjusting for the average home size within vintage cohorts reveals an inverse correlation between the year of construction and the average electricity use *per-square-foot*. Improved building envelopes and newer, energy-efficient appliances are likely contributors to this trend. Homes built within the past decade use 20 percent less electricity, on average, than those built before 1980.



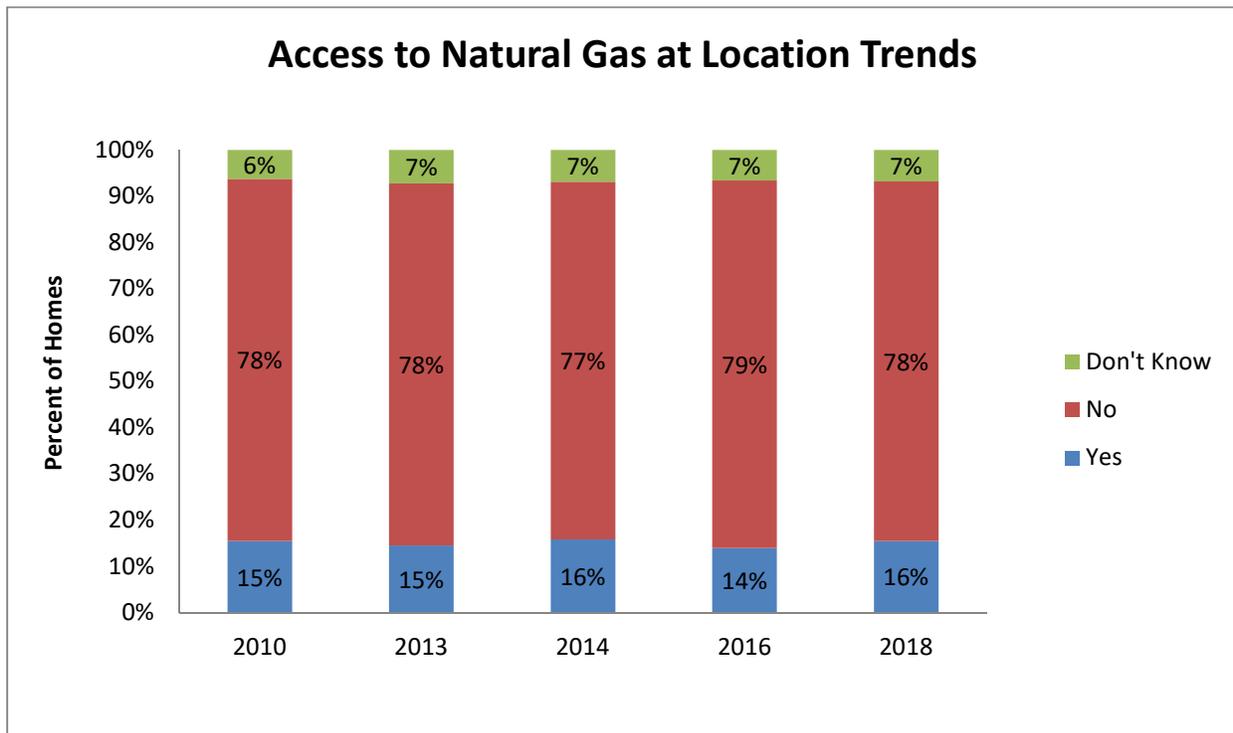
Only 16 percent of homes reported having access to natural gas service at their dwelling, slightly higher than the 2016 survey.

Access to natural gas has not exhibited a discernable trend across the last five surveys, remaining between 14 percent and 16 percent. Natural gas availability may increase in the future if prices remain low and gas utilities determine that it is cost-effective to expand their distribution system into existing developments along with new developments. However, the current data set does not yet reveal this pattern.

Access to Natural Gas at Location

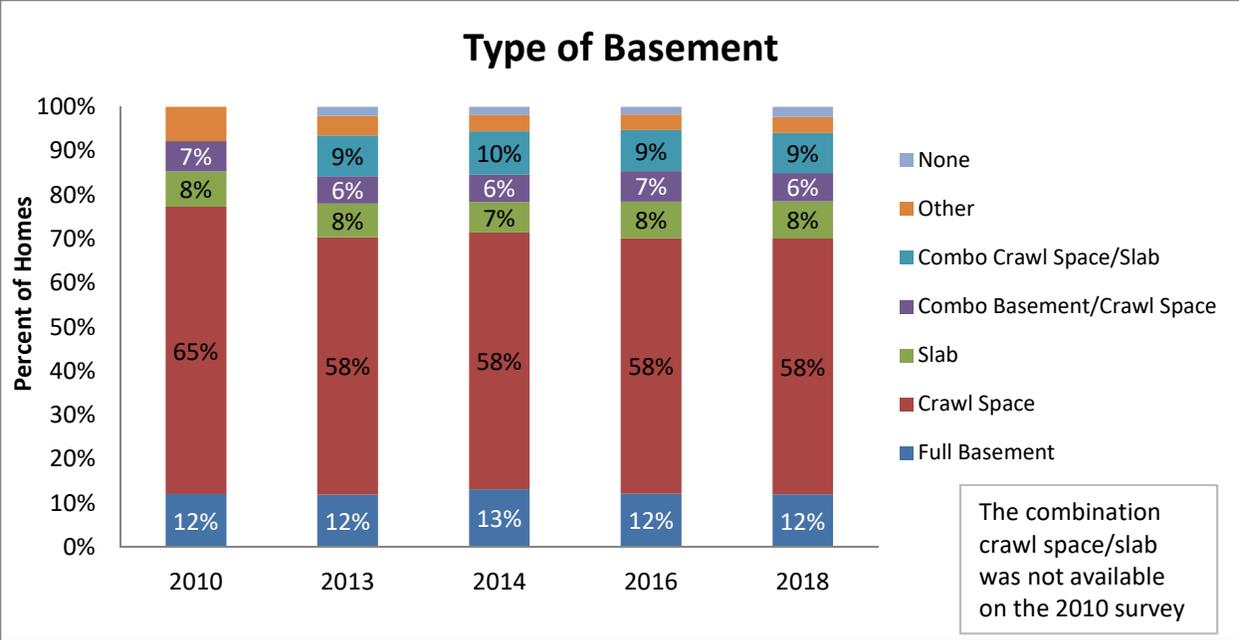


Access to Natural Gas at Location Trends

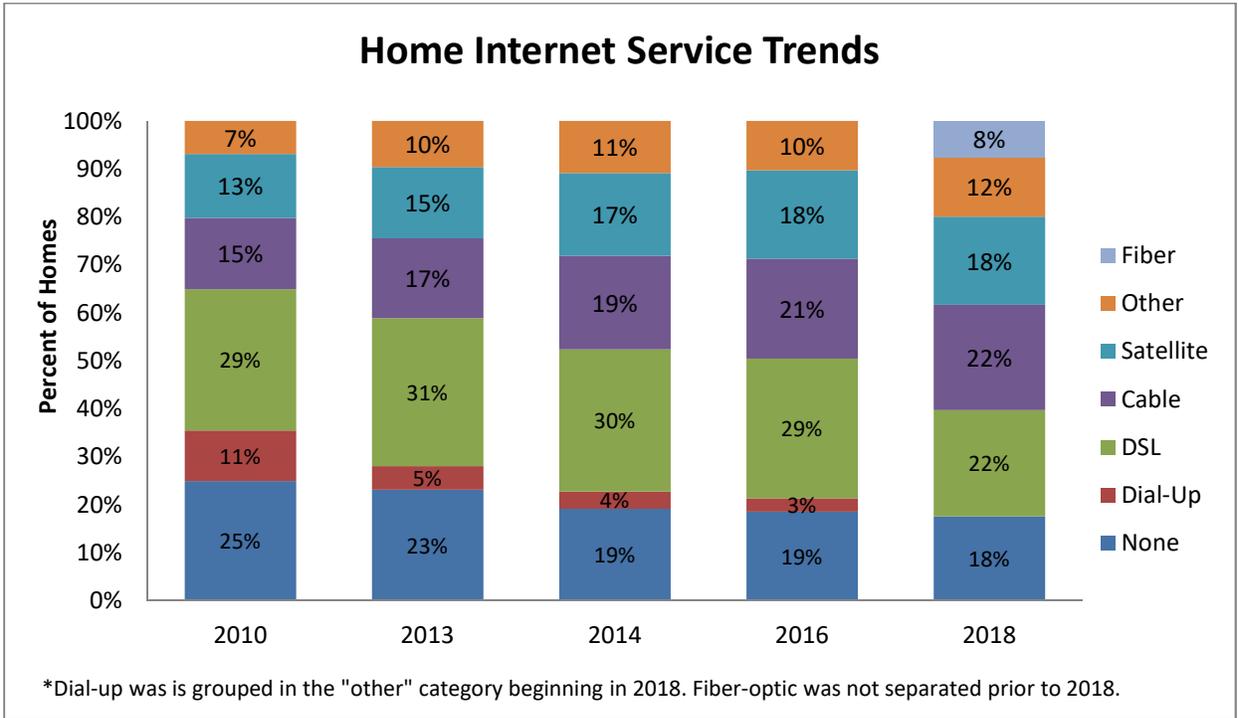


Two of PNGC's member cooperatives currently have natural gas access in excess of 30 percent of their members' homes. However, natural gas availability remains below ten percent for eight of PNGC's 15 member systems.

More than one-half of dwellings have a crawl space under the entire home, while only 12 percent have a basement under the entire home. These shares have remained very stable over time. The basement type has implications for the types of insulation measures needed and applicable to dwellings.



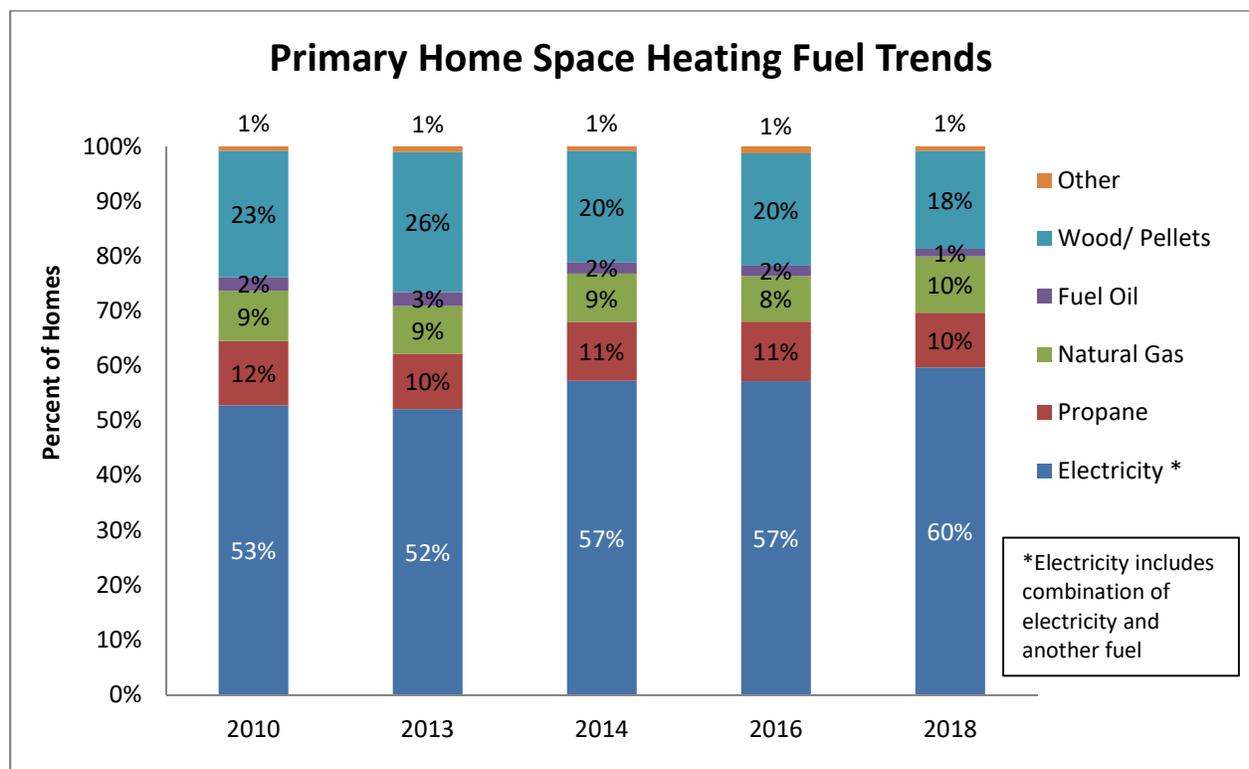
The share of homes with Internet service is over 80 percent, with eight percent having a fiber-optic connection. The share with cable internet service has increased, while the share with DSL connections has declined and dial-up internet service is virtually non-existent. Faster and more widespread high-speed internet access enables enhanced data transfer and communications between the cooperative and its members, and may provide opportunities for new service offerings.



Space Heating and Cooling

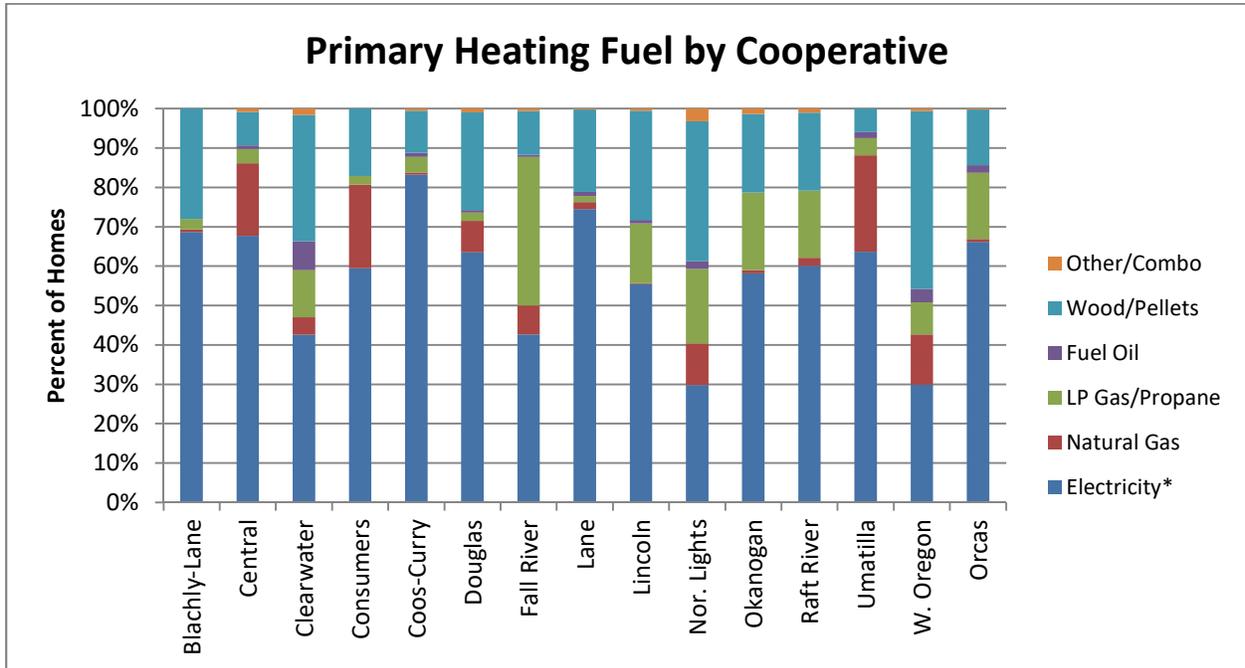
Space heating and cooling typically comprise one-half of a home’s total energy consumption across all fuels, although this proportion has decreased over time due to more efficient heating and cooling equipment, more efficient buildings, and growth in other home appliances and energy uses.

Approximately 60 percent of survey respondents indicated that they use electricity as their primary home heating fuel, a slight increase since the 2016 survey. A contribution to this trend is the increasing popularity of ductless heat pumps, which will be discussed later in this section. The saturation of homes using wood as their primary fuel source has declined over time while the shares of other fuels have remained relatively steady. The decline in wood space heating may be correlated to the aging population, as older respondents are less likely to use wood as a primary home heating fuel.

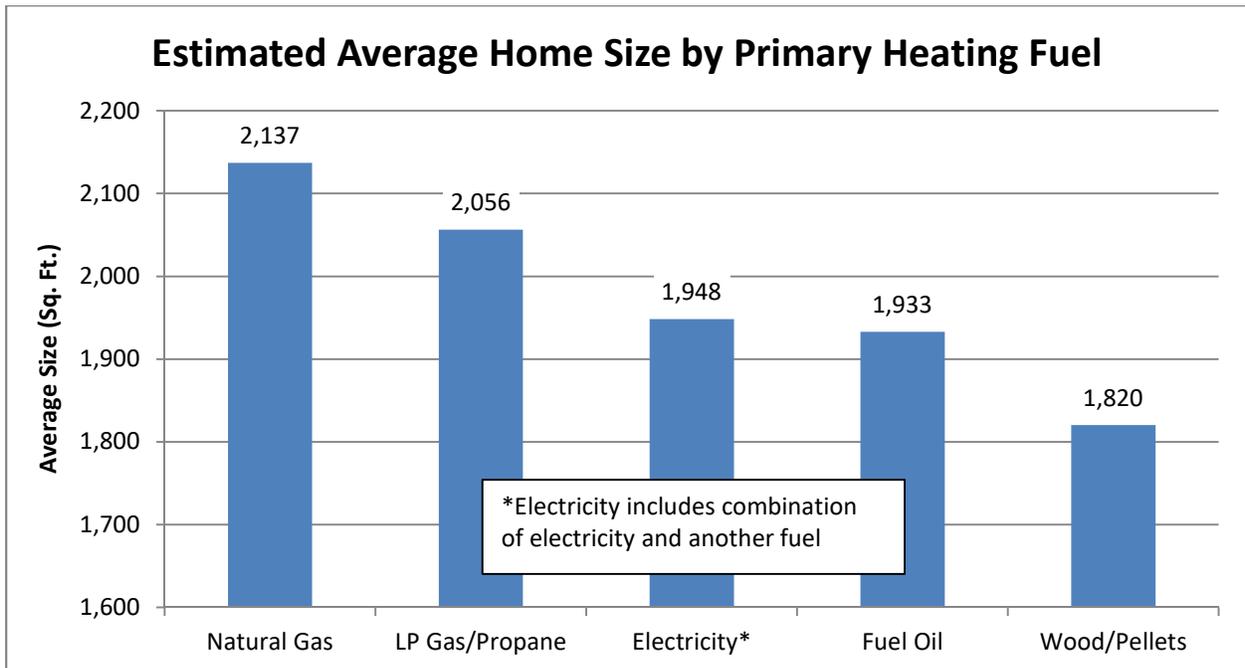


Electricity and wood heating often compliment or supplement each other. Nearly two-thirds of homes listing wood/pellets as their primary heating fuel also listed electricity as a secondary heating fuel (by comparison, 28 percent of all homes listed electricity as a secondary heating fuel source). In addition, one-third of homes listing electricity as their primary heating source also list wood as a secondary heating fuel. The homeowners’ choice between those two fuels that is considered “primary” may vary from year to year depending upon weather, relative fuel prices, and wood availability.

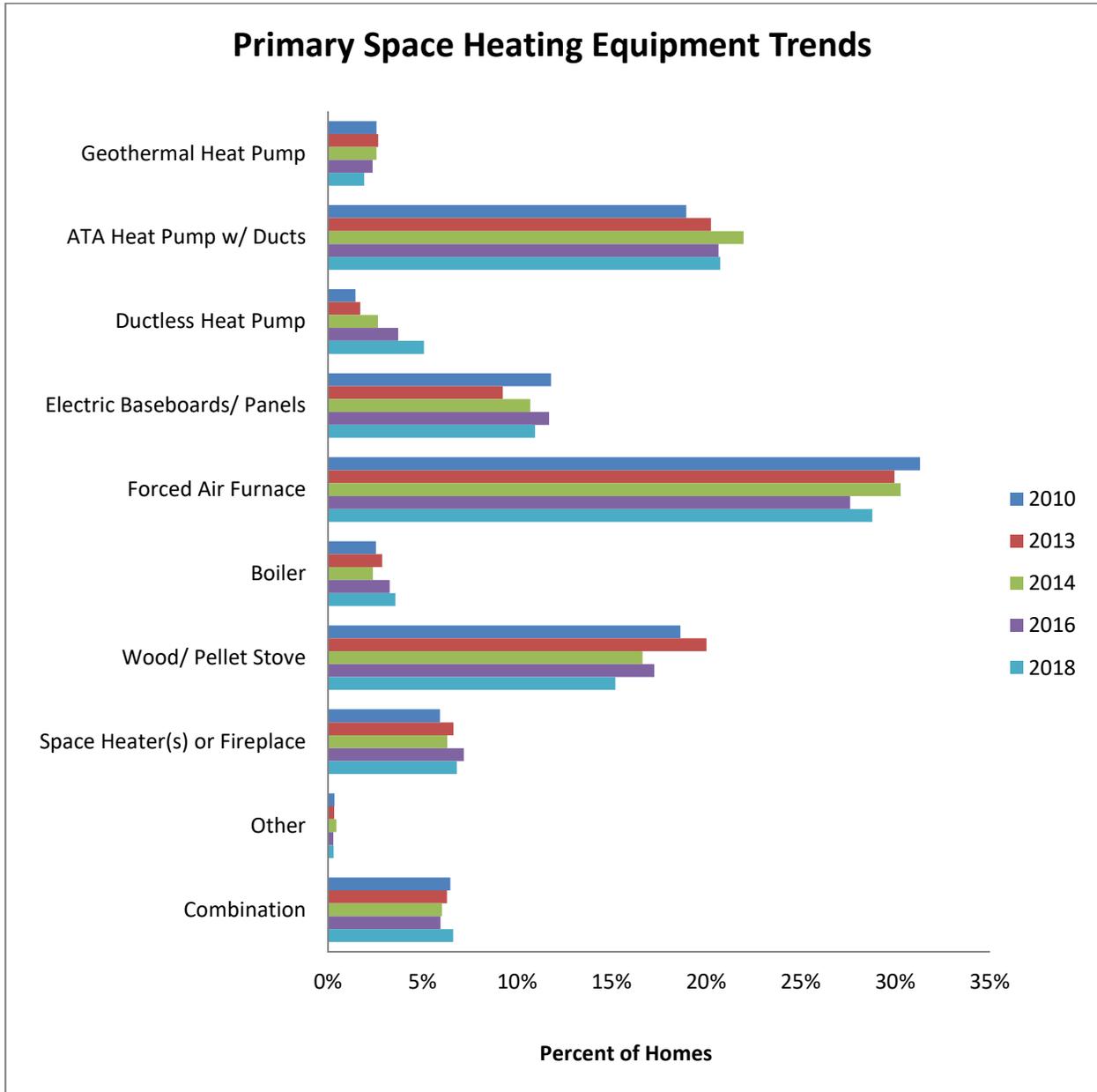
Across PNGC's member cooperatives, primary electric heating saturation ranges from 30 percent to 83 percent of homes, illustrating the wide variety of home heating choices and fuels prevalent across the PNGC system. Primary wood heating also has a very broad saturation range, from six to 45 percent.



Natural gas and propane heating are somewhat more prevalent in larger homes, while electricity, fuel oil, and wood heating are more common in smaller homes.

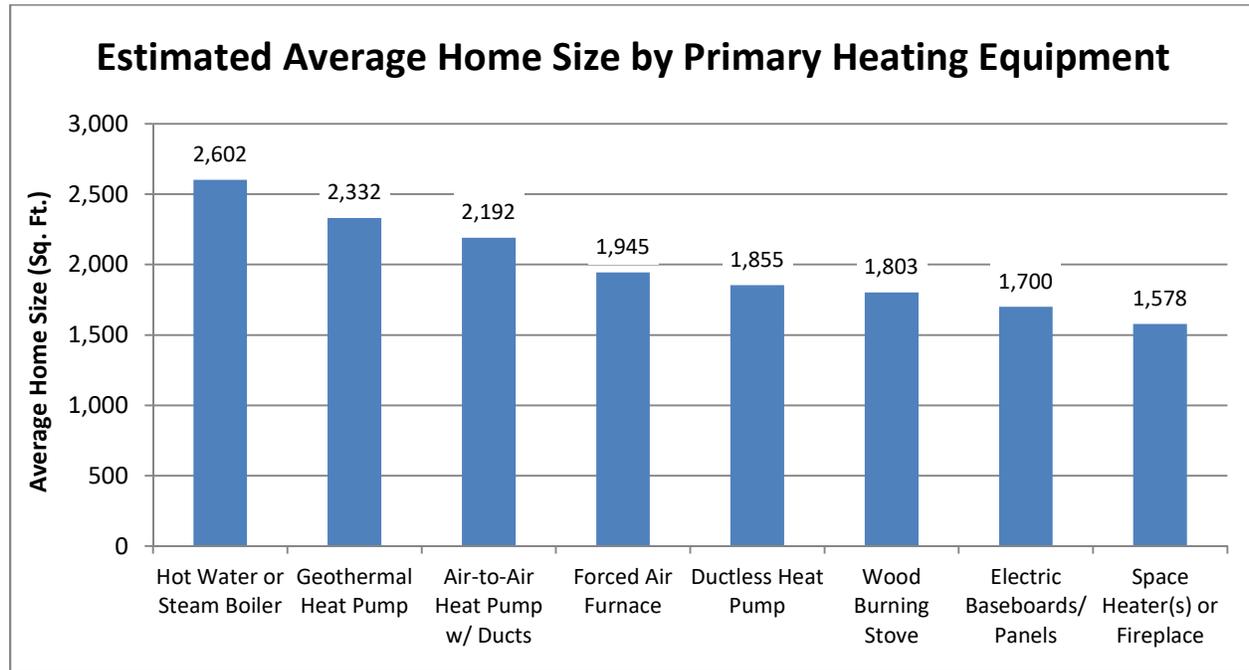


The most common home heating equipment on the PNGC system is a forced-air furnace, followed by air-to-air heat pumps and wood or pellet stoves. In general, the share of forced air furnaces has declined while the share of heat pumps, primarily ductless systems, has increased over time.

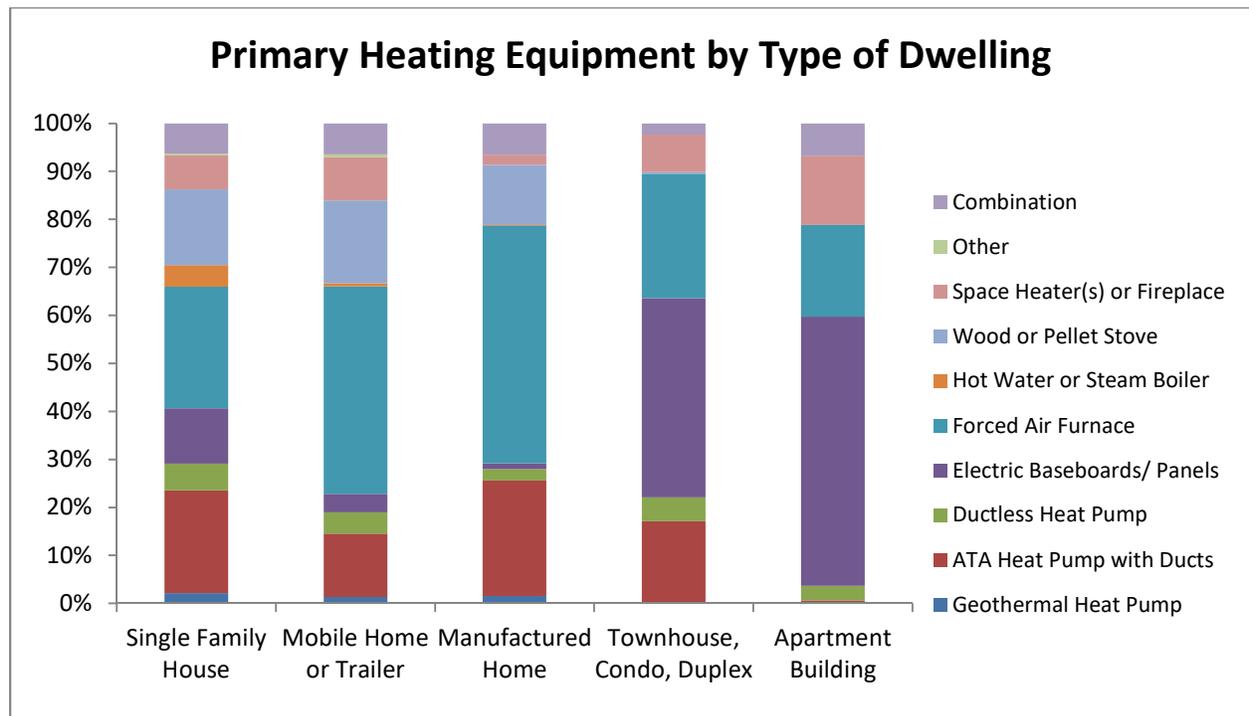


The types of home heating equipment varies widely across the PNGC system. The share of homes with heat pumps (geothermal, air-source with ducts, and air-source without ducts) ranges from three percent to 41 percent across PNGC’s 15 member cooperatives. The share with electric baseboards or radiant systems ranges from four percent to 26 percent across cooperatives. The choice of heating equipment can have a substantial impact on winter energy consumption and peak demands, and is influenced by climate, incomes, and other factors.

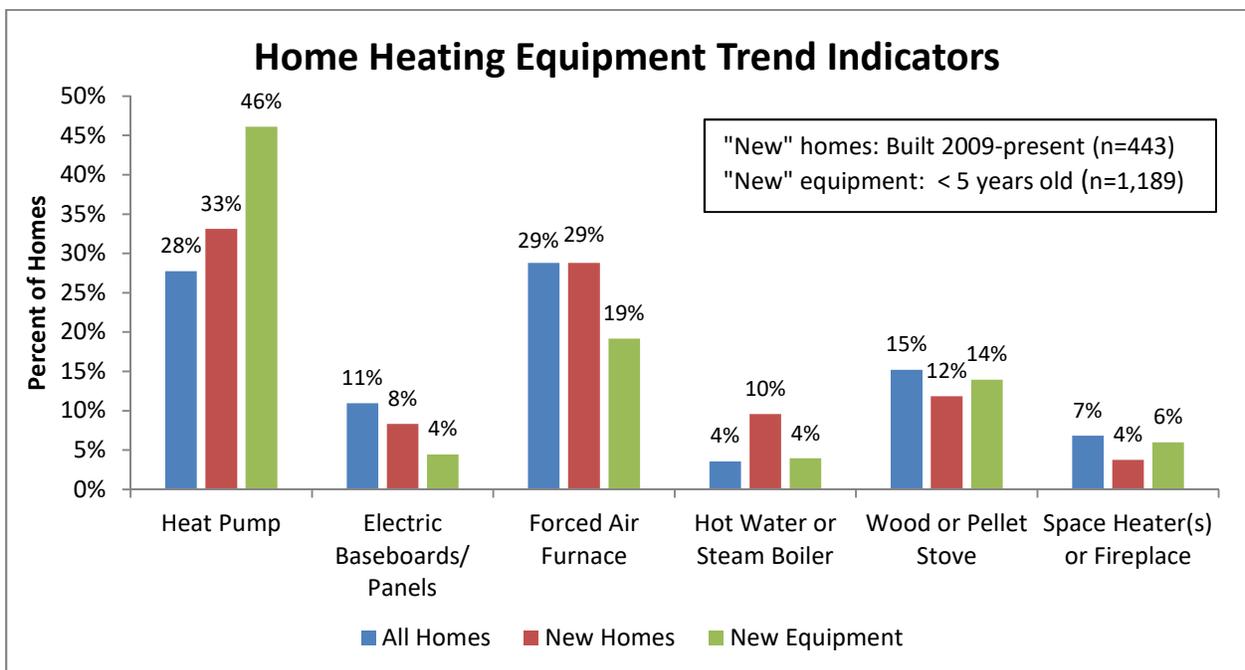
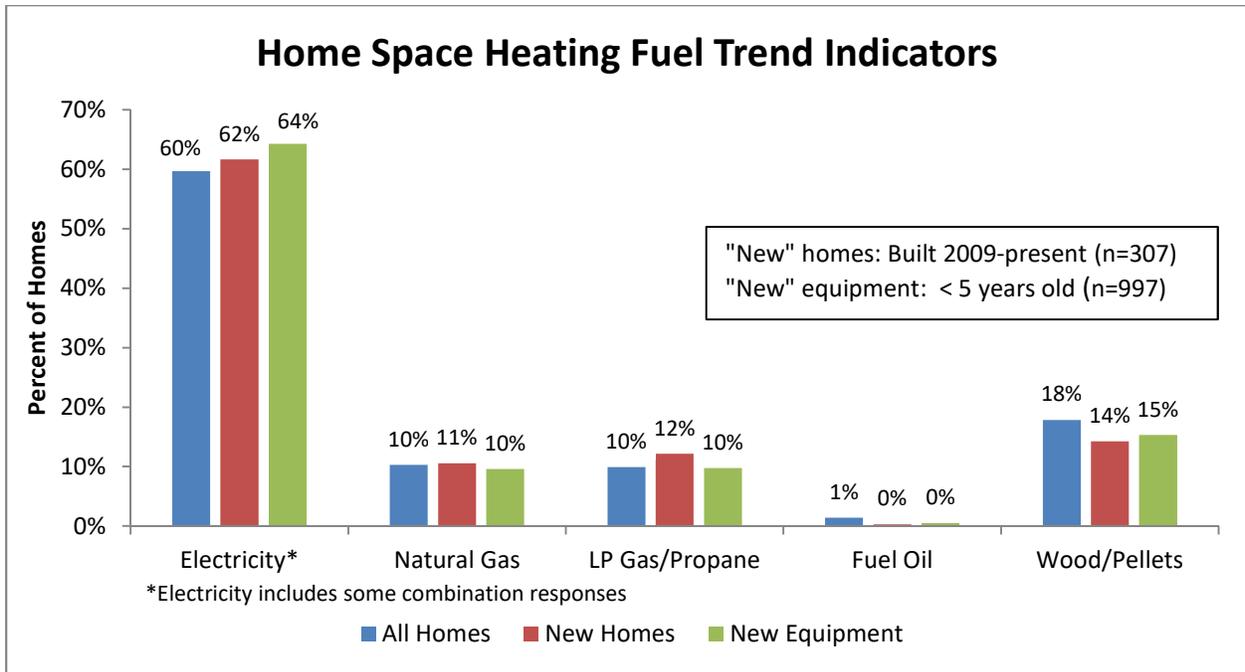
Boiler systems and geothermal heat pumps are typically found in larger homes, while space heaters and electric baseboards are prevalent in smaller homes.



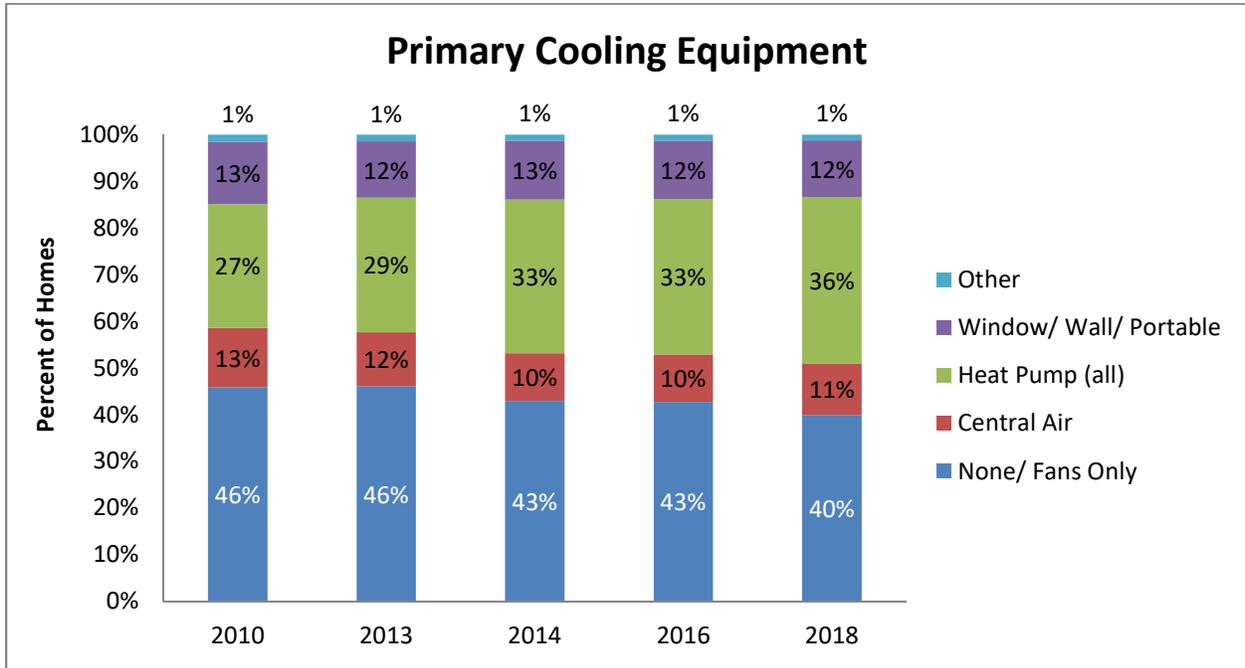
The type of heating equipment found in different dwelling types is illustrated below. Electric baseboards are more prevalent in apartments, condos, and townhouses, while forced air furnaces are more common in mobile and manufactured homes.



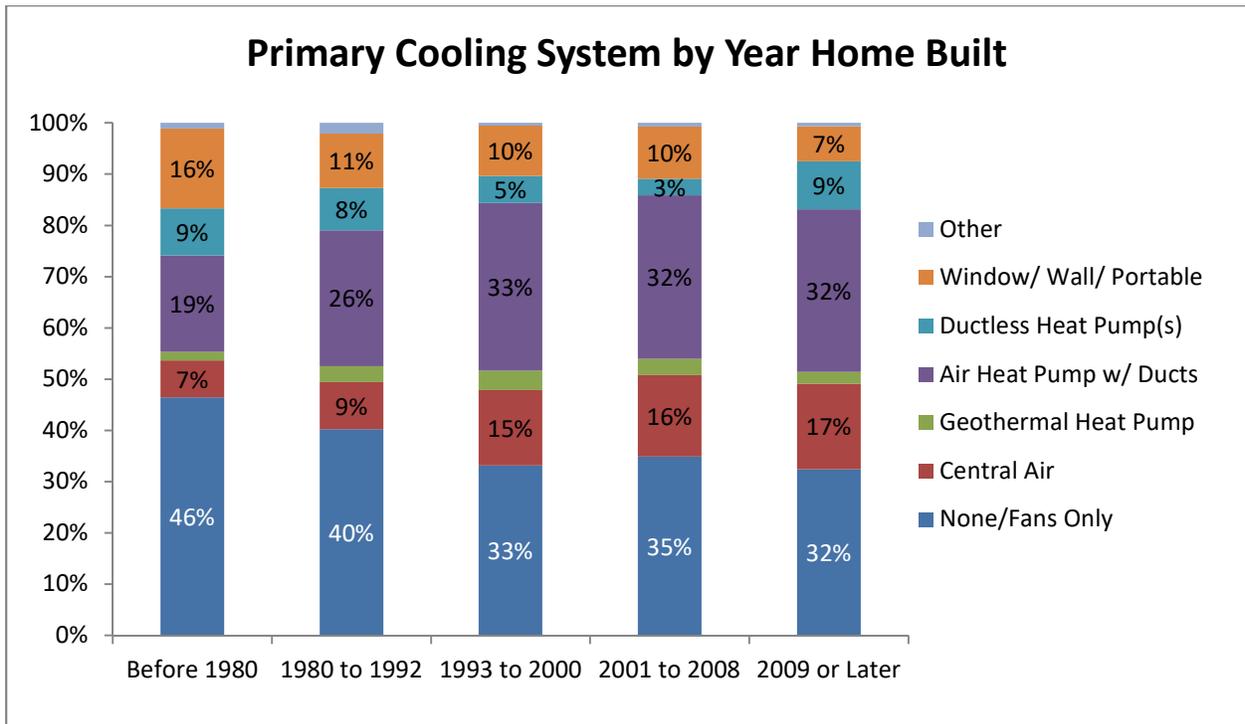
Comparisons of saturations across the existing housing stock, new homes (built since 2009), and new equipment (less than five years old) provide insights into future saturation trends. Space heating fuels and equipment are compared in the following two graphs. Trend indicators in the first graph reveal the changes leading to the recent increase in electric heating saturations, since electric heating equipment is more prevalent in new homes and new equipment compared to the existing housing stock. The second graph reveals the underlying gains in heat pumps and declines in furnaces. Nearly one-half of new homes have heat pumps as their primary heating equipment.



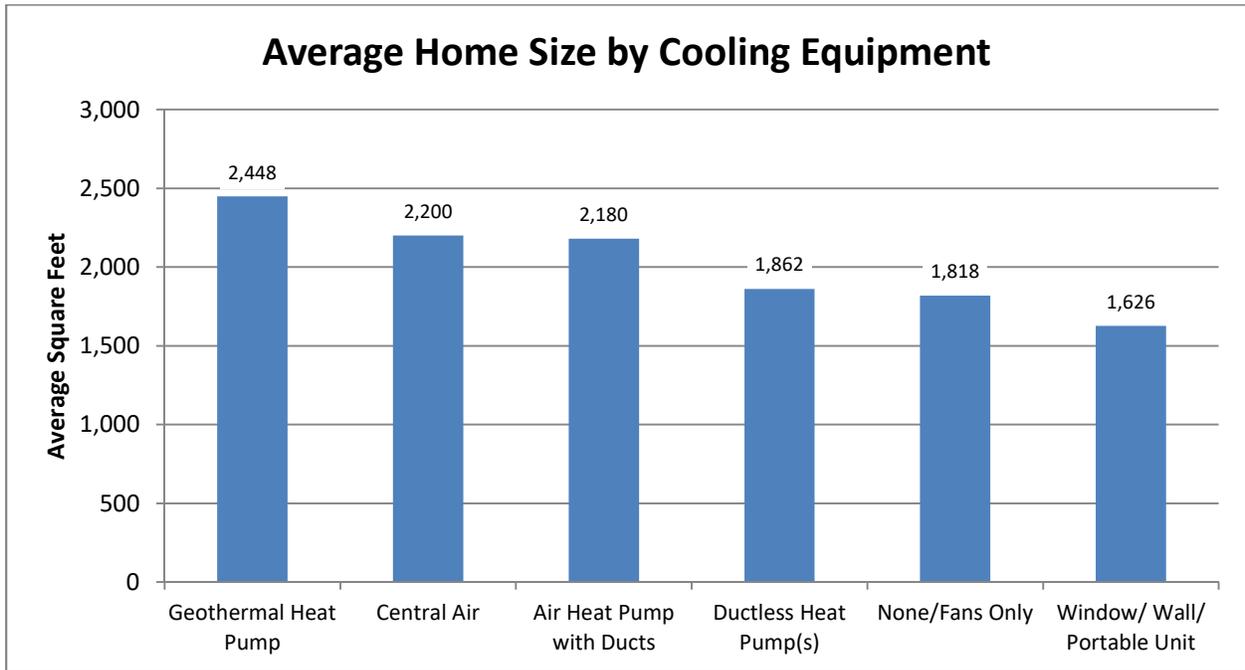
Sixty percent of homes have some form of mechanical air conditioning system, a share that has slowly increased over time. Of those, heat pump systems are the most common, with traditional central air conditioning and window, wall, or portable units comprising slightly more than a ten percent share each.



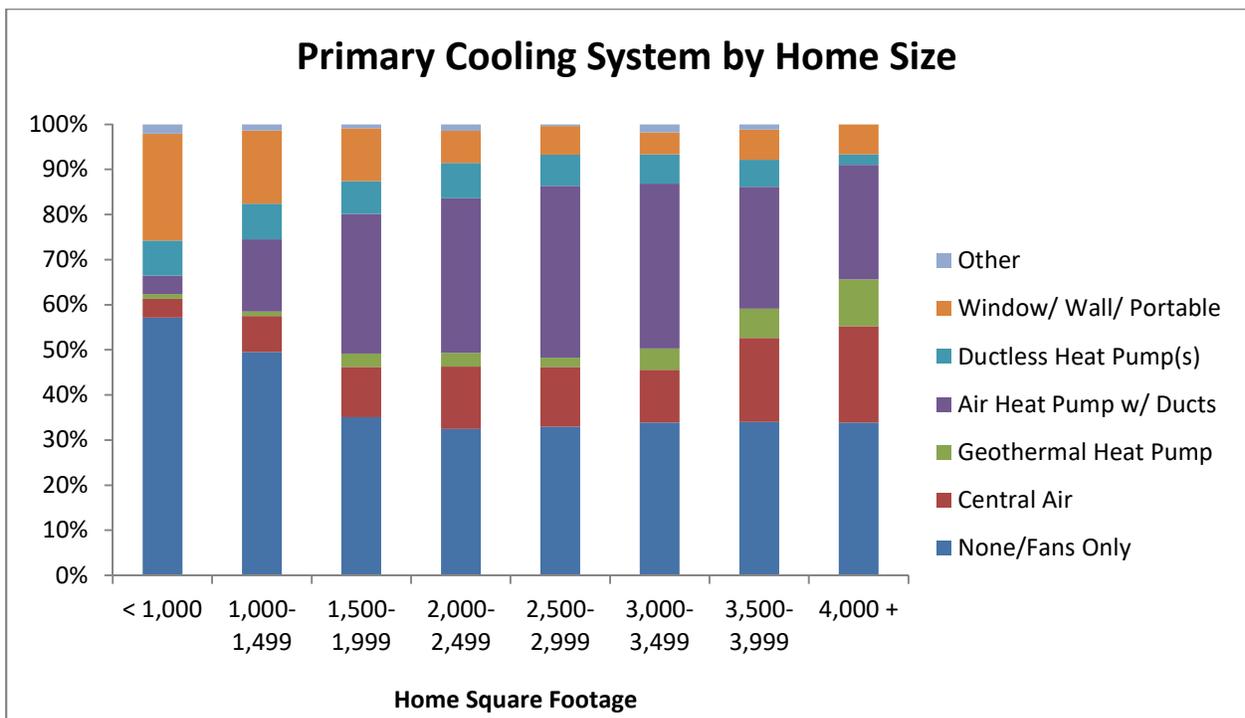
Newer homes are more likely than existing homes to have some form of mechanical cooling system, although one-third of homes built after 2008 report having no air conditioning.



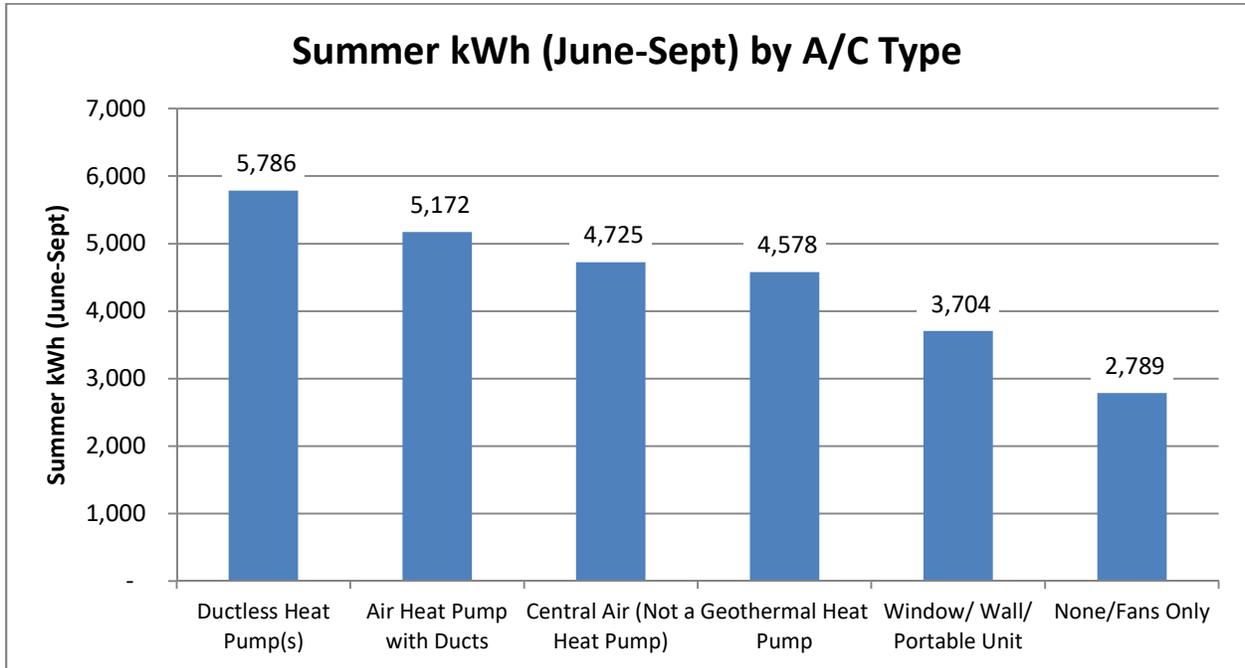
As was true of primary heating systems, geothermal heat pumps are more likely to be found as the cooling system in larger homes. Window or wall air conditioners are more common in smaller homes.



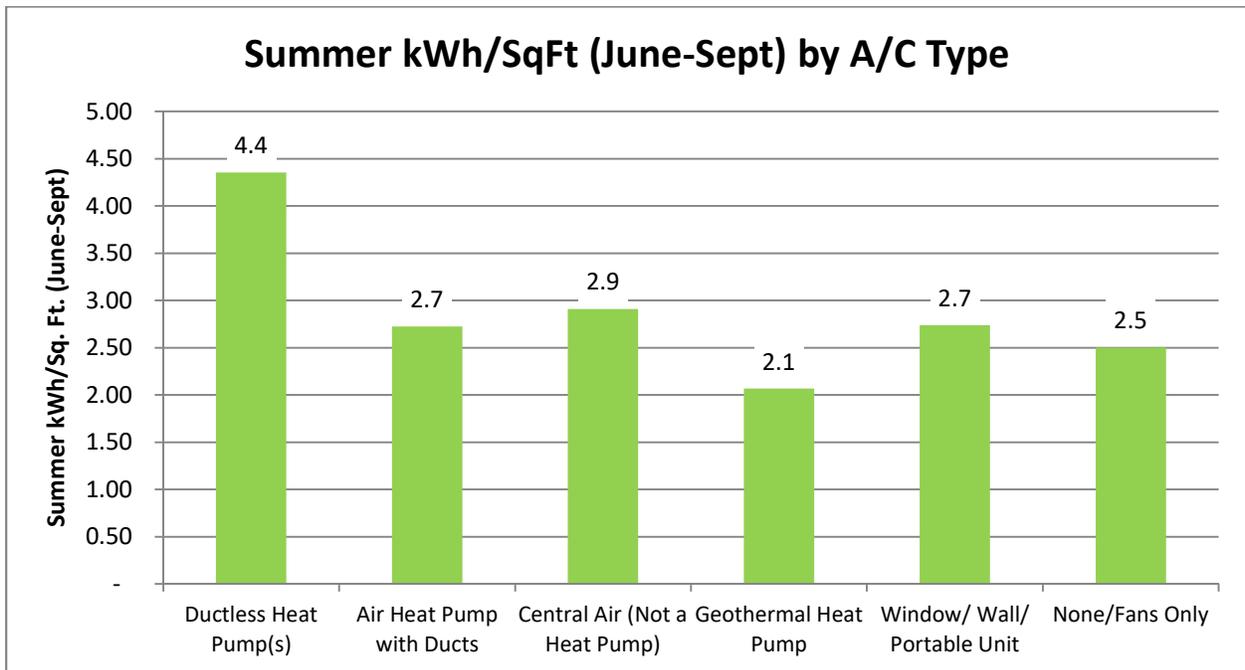
Homes larger than 1,500 square feet are more likely to have air conditioning of any type, while smaller homes are more likely to have window/wall units, if they have any mechanical air conditioning at all.



Average home summer electricity use varies with the type of home cooling system. Homes with ductless heat pumps use the most summer electricity, on average. Homes with window units or no mechanical air conditioning use the least, but are smaller than average size, as discussed previously.



Adjusting for home sizes reveals that homes with ductless heat pumps use significantly more electricity during the summer months, on average, than homes with other cooling equipment. Homes with other air conditioning or none use between 2.0 and 3.0 kWh per square foot over the summer months.

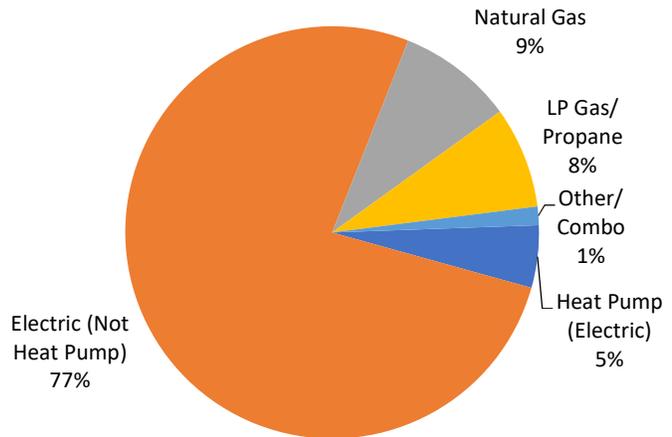


Water Heating

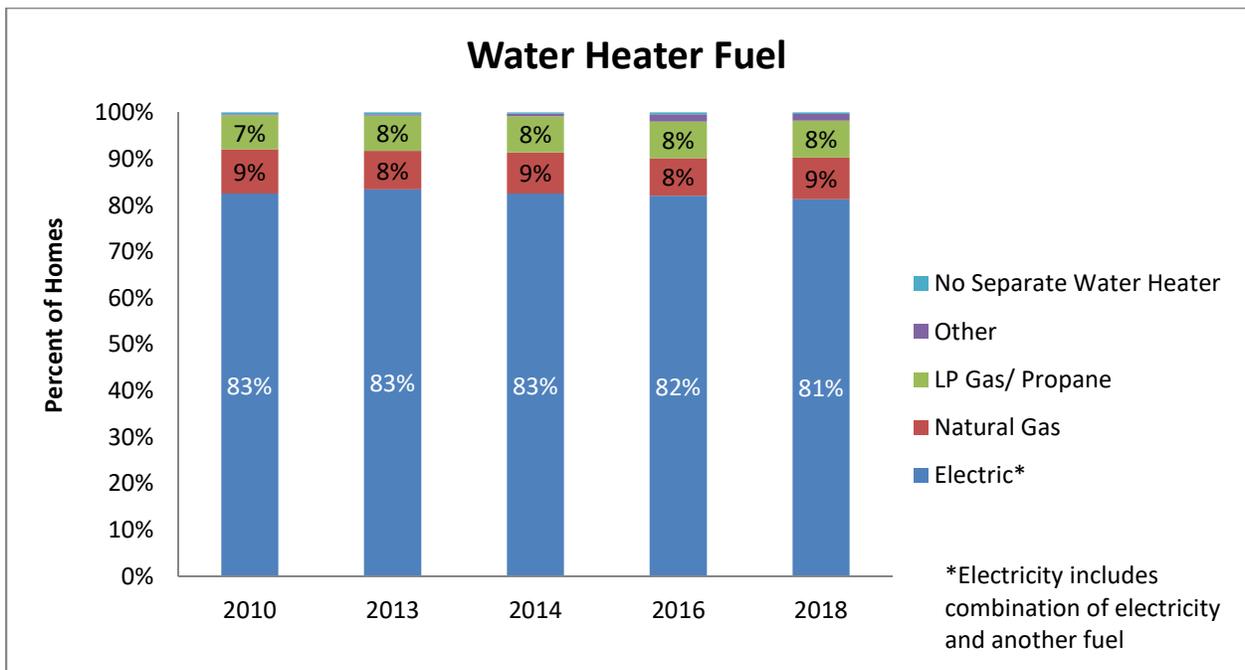
Water heating is a major home energy use, typically comprising one-fifth of a home’s total energy consumption.

Approximately 82 percent of homes on the PNGC system have electric water heaters, including five percent with a heat pump water heater, a high-efficiency technology that has slowly gained market share. A portion of these may be integrated with home heating systems while some may be stand-alone units. There is some evidence that the saturation of heat pump water heaters will increase in the future, as nine percent of new homes had heat pump water heaters and seven percent of new water heating equipment was heat pumps.

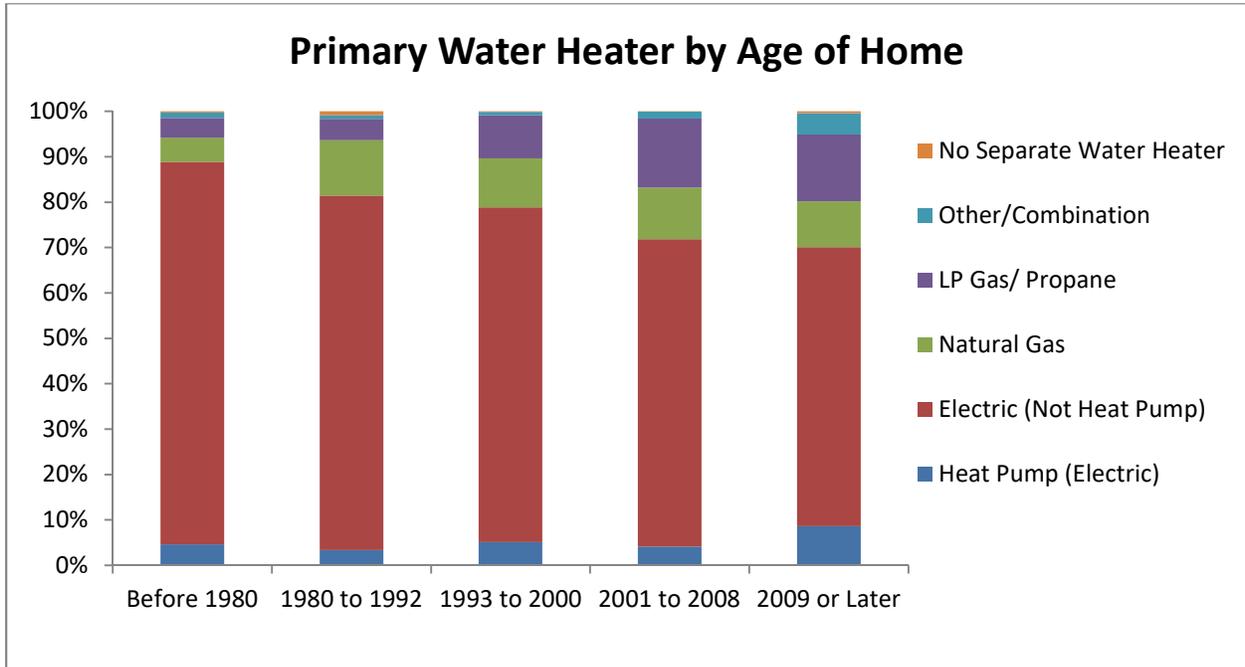
Type of Water Heater



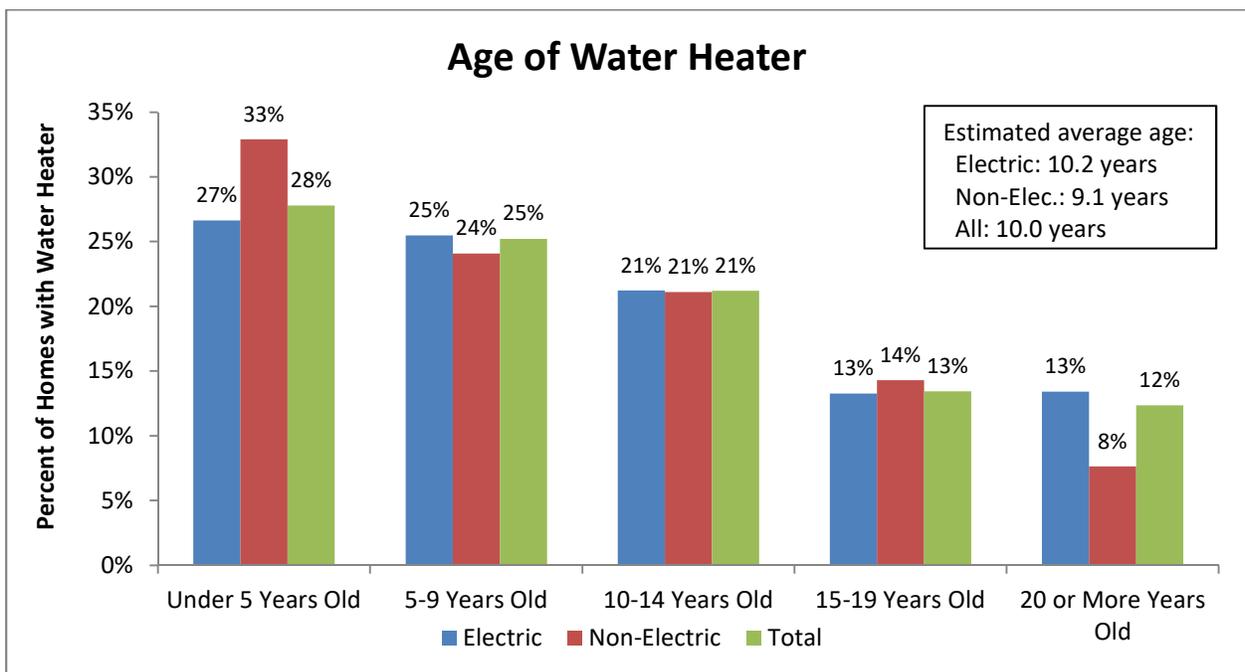
The electric water heater saturation has remained relatively constant since 2010, remaining above 80 percent of homes across all five survey cycles. The shares of other water heating fuels have also remained statistically unchanged, illustrating the substantial fuel inertia for water heating.



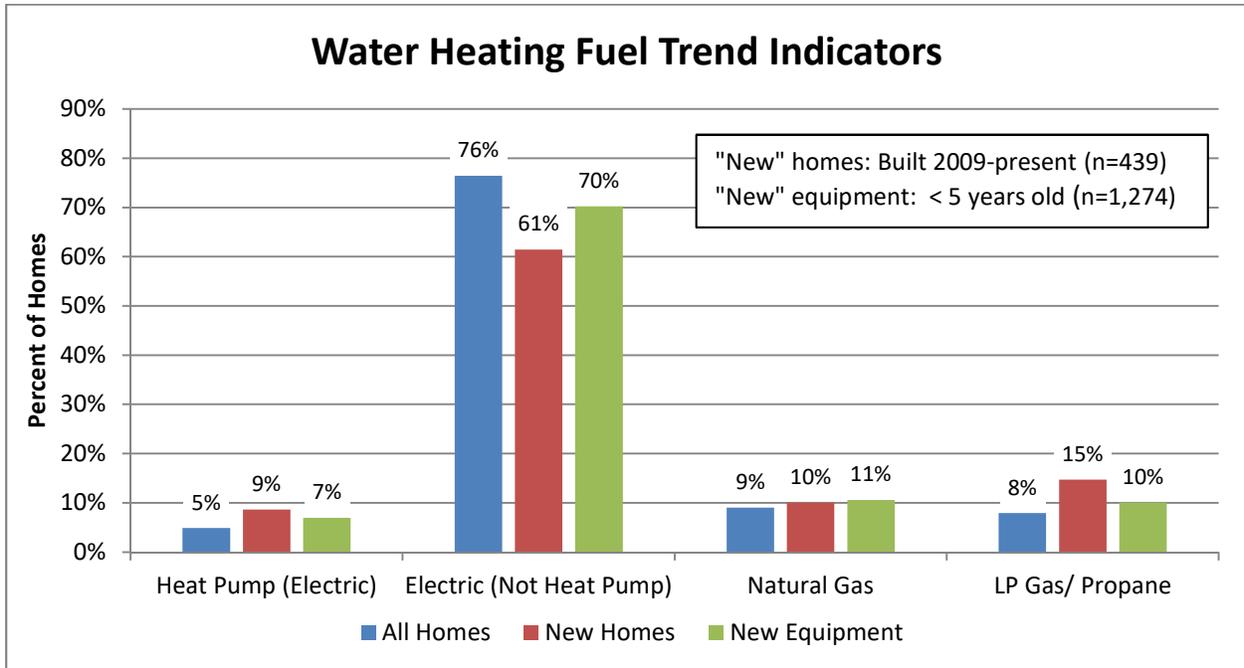
Electric water heating saturations tend to be somewhat lower in homes constructed after 2000, possibly indicating a future decrease in electric water heater saturations.



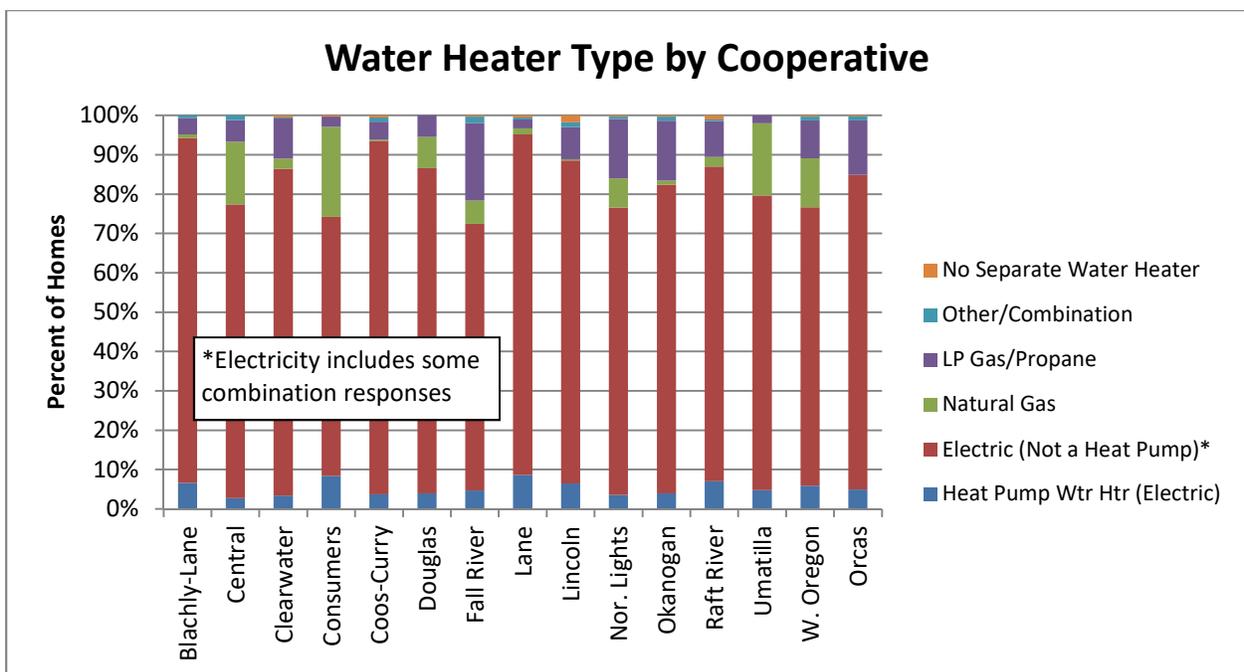
The average age of water heaters on the PNGC system is about 10 years. On average, electric water heaters are slightly older than non-electric water heaters, which could indicate a longer average appliance life or a greater share of non-electric new water heaters. More than ten percent of water heaters are 20 or more years old.



Current water heater saturations are compared to the share of new equipment (installed in the last five years) and saturations in new homes (built in 2009 or later). These indicators suggest some potential future changes in equipment and fuel. New homes are somewhat more likely to have heat pumps, natural gas, or propane water heaters, indicating some modest shift toward those in the future.

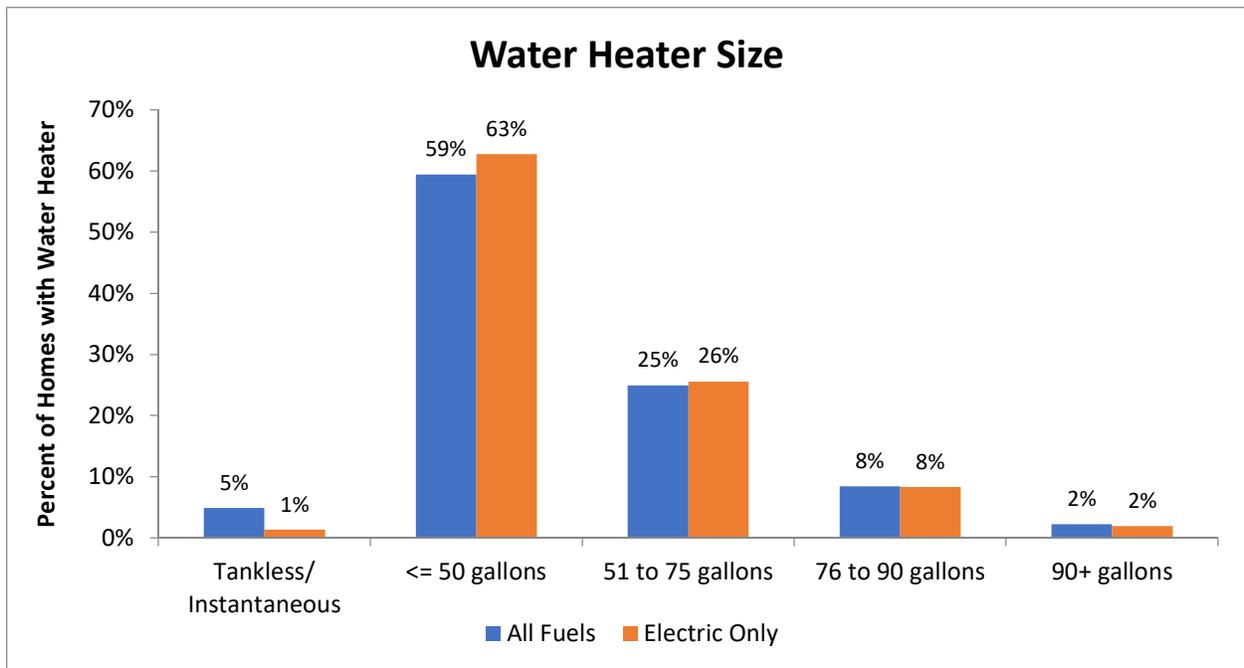


Water heating fuel saturations by member cooperative are illustrated in the following graph. Saturations of electric water heaters range from 72 to 95 percent across the PNGC member systems.



Nearly two-thirds of water heaters on the PNGC system are 50 gallons or smaller and approximately one-fourth are 51 to 75 gallons, while only 10 percent of water heaters are larger than 75 gallons. The sizes do not vary substantially between electric and non-electric units, except for tankless/instantaneous units. The high share of smaller electric units would present a challenge for any water heater load control program, should PNGC and its member systems consider such a program in the future. If PNGC or its member systems choose to explore water heater control programs in the future, a program to promote larger, high-efficiency electric water heaters is recommended in conjunction with any water heater load control implementation.

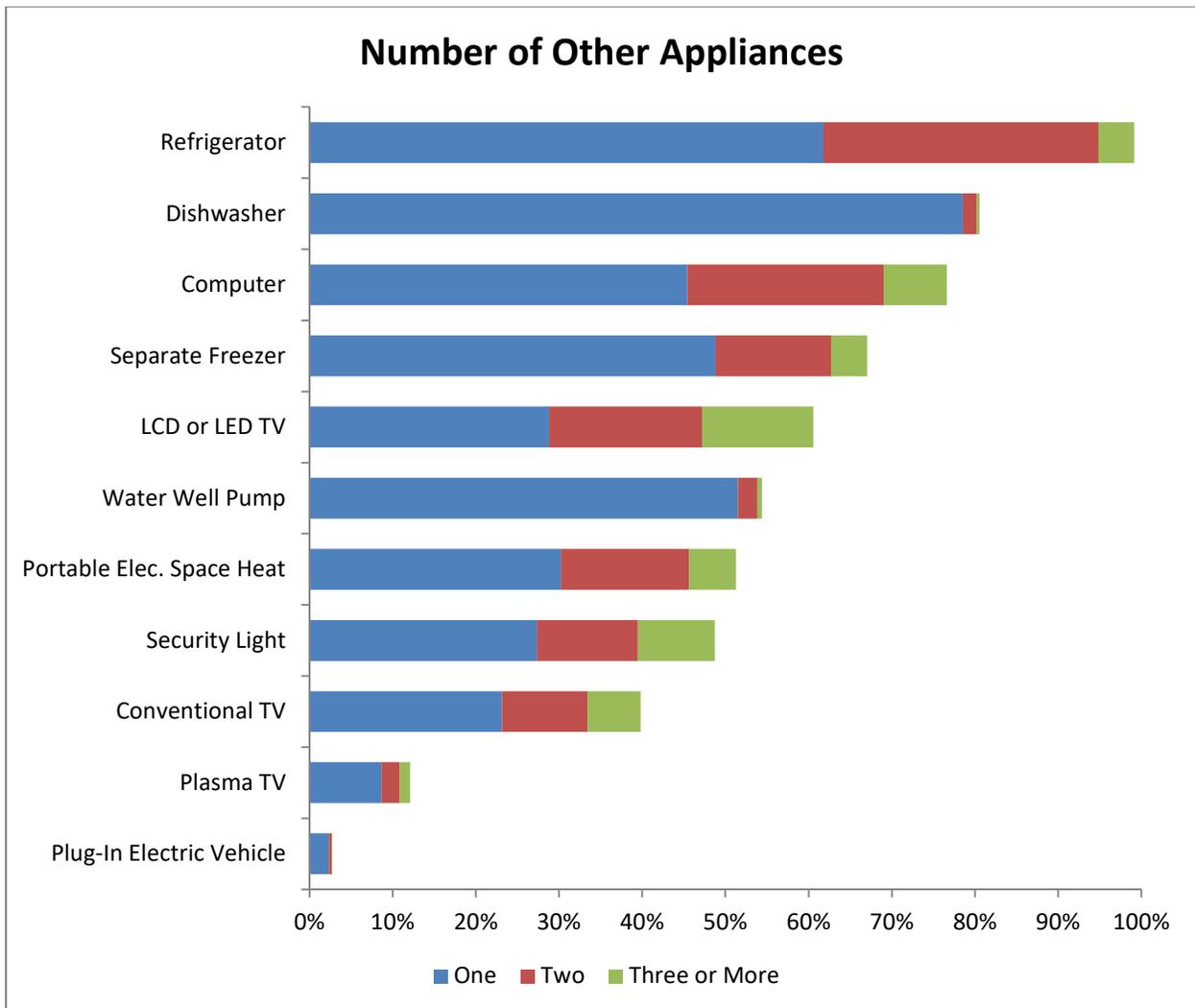
While a small share of homes have tankless (aka “instantaneous” or “on-demand”) units which provide energy savings by eliminating heat losses of the tank, the majority of these are non-electric units. These are especially common in seasonal dwellings, where approximately eight percent have tankless water heaters.



Other Appliances and Energy Uses

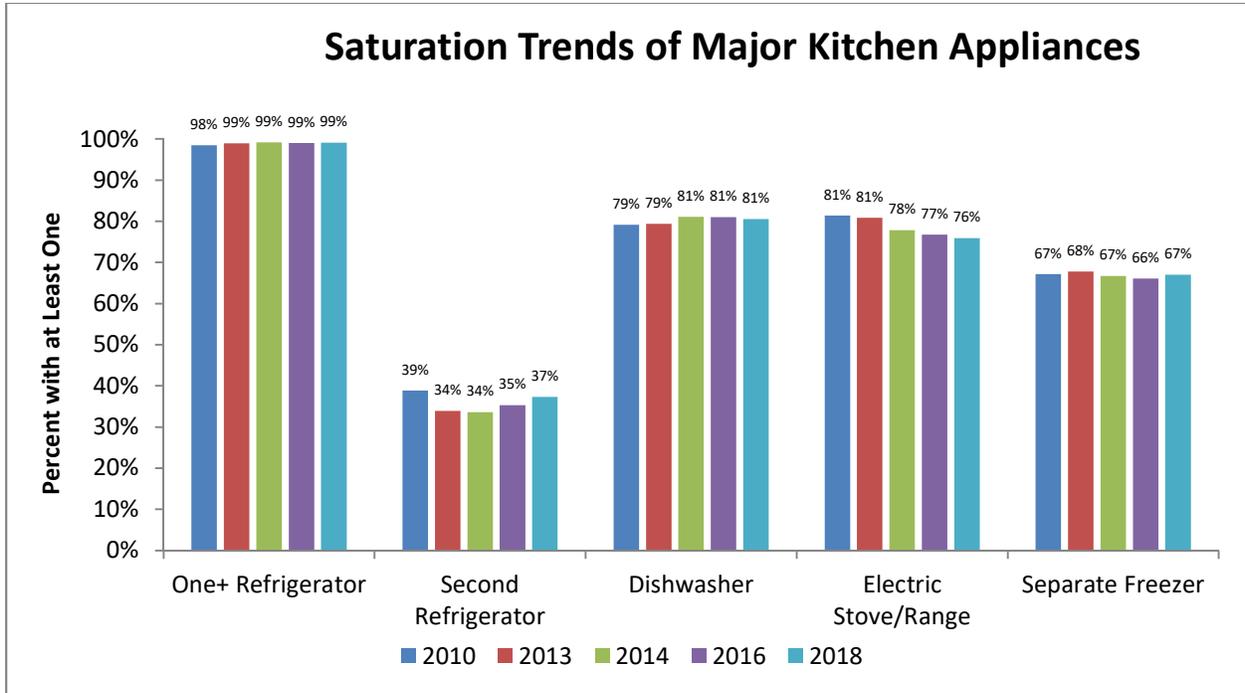
Space heating, air conditioning, and water heating typically comprise one-half of home energy use. The remaining energy consumption comes from a variety of other appliances, tools, and various devices. Many of the larger appliances and other energy using-devices were included in the survey and are discussed in this section.

The following graph summarizes the number of various appliance holdings within homes where owning more than one unit is common. More detailed discussions about these home appliances are included in the following sections, and are segmented into kitchen, laundry, entertainment, and other categories.



Kitchen Appliances

The survey captured information about major kitchen appliances, including the number of appliances owned or fuel type where applicable. Saturations trends of major kitchen appliances across the five surveys are illustrated below.

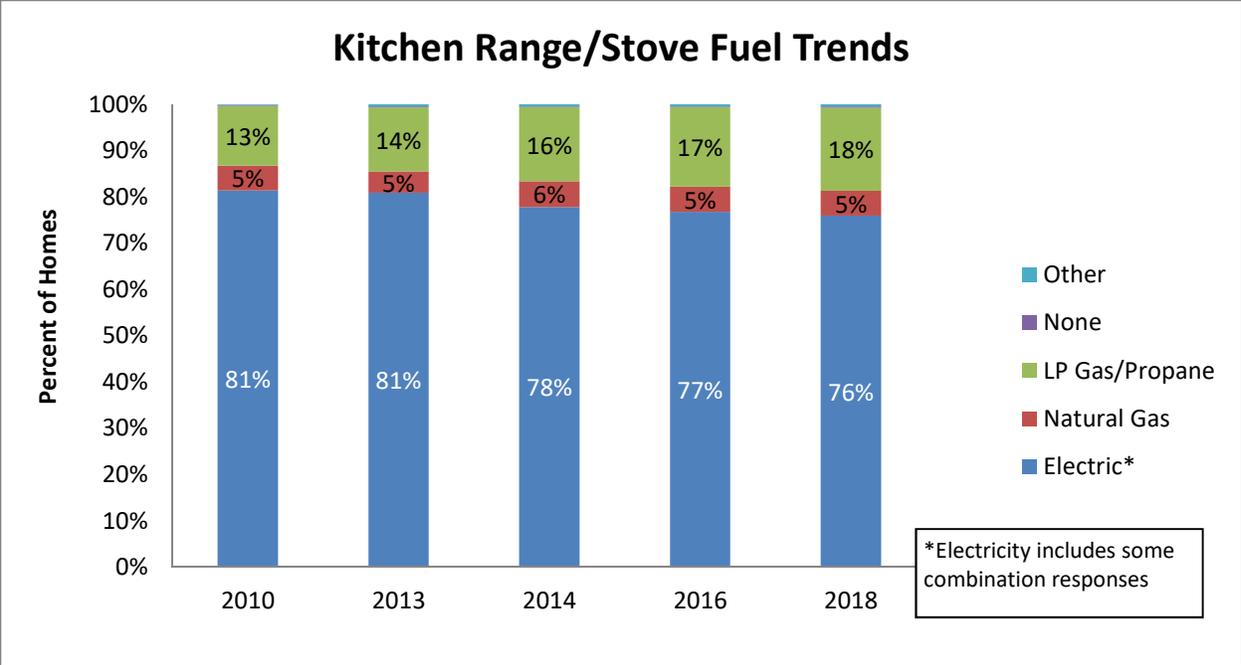


Nearly all homes on the PNGC system have a refrigerator, and 37 percent have more than one unit. The share of homes with more than one refrigerator has increased slightly in recent years, indicating the potential for a conservation program to remove or encourage reduced use of secondary units. This could save a substantial amount of electricity, since refrigerators are a major electricity user, especially older, less-efficient units.

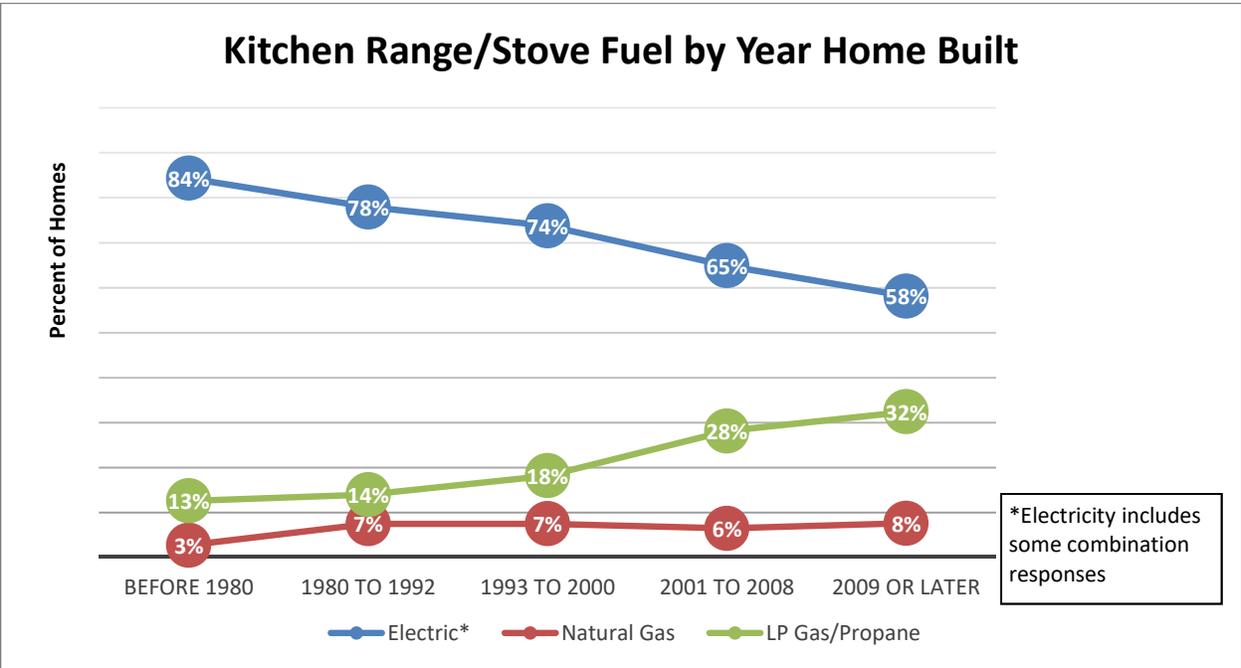
Approximately two-thirds of PNGC homes have a separate freezer, a saturation that has remained statistically constant across the five surveys. Replacement of older units, downsizing to smaller units, reduced time plugged in, or removal of under-utilized units all have the potential to save significant amounts of electricity.

Over 80 percent of homes on the PNGC system have automatic dishwashers, and the saturation has not changed significantly in recent years.

Although most kitchen ranges/stoves in the PNGC service territory are fueled by electricity, the use of LP gas/propane has increased over time. The share of homes with electric stove/ranges has decreased from 81 percent in 2010 to 76 percent in 2018.



The kitchen range/stove fuel trends are partially driven by fuel choices for new homes. As illustrated below, over 30 percent of new homes are choosing propane for cooking while less than 60 percent are choosing electricity, suggesting continued declines in electric cooking in the future as the housing stock is gradually replaced.

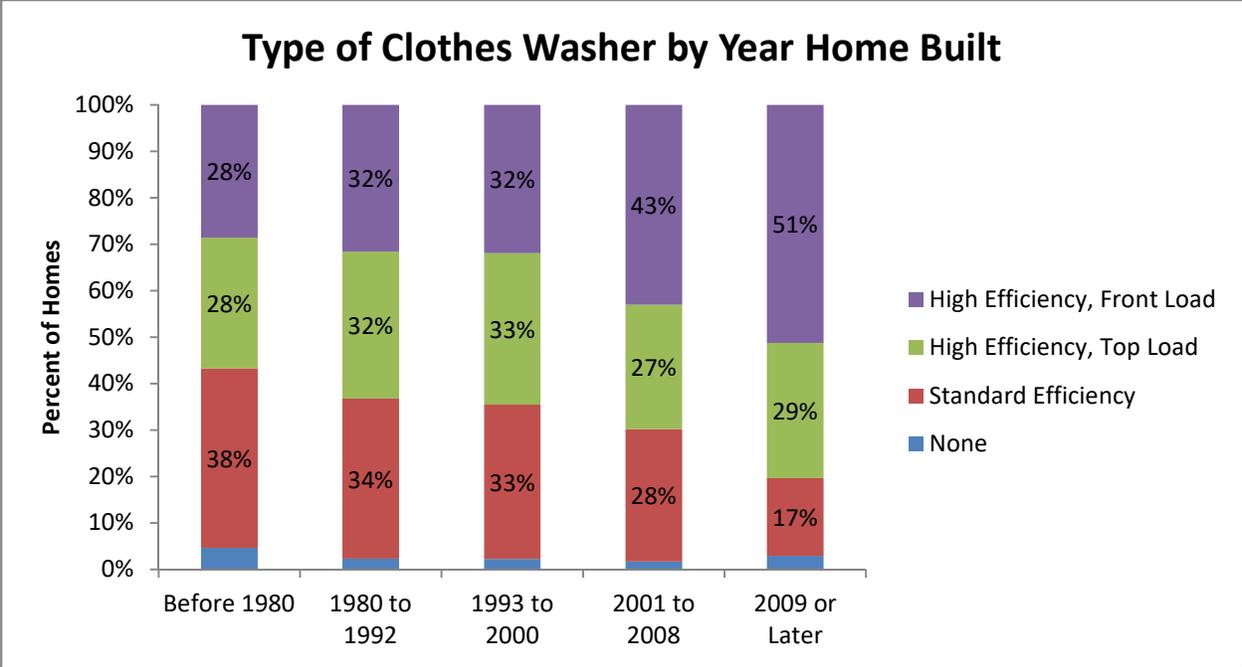


Laundry Appliances

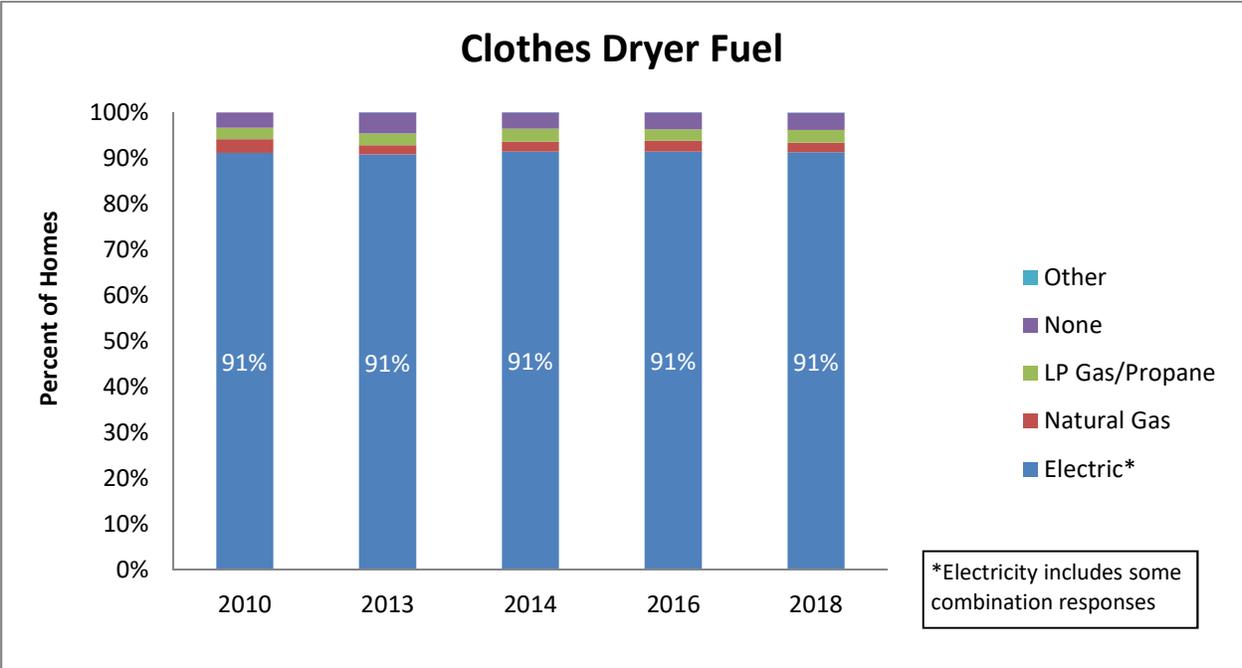
The market transformation toward high-efficiency clothes washers is evident across the five surveys. Over 60 percent of homes on the PNGC system have high-efficiency clothes washers, with nearly equal shares of front-loading and top-loading high-efficiency units. Meanwhile, only one-third of homes still have standard-efficiency clothes washers, a decrease from one-half of homes in the 2010 survey. High efficiency clothes washers save electricity for the washing machine cycles, use substantially less hot water and detergent, and reduce drying times for mechanical dryers. Incentives to purchase high-efficiency units could help speed the attrition of the remaining standard-efficiency units that are still found in one-third of homes on the PNGC system.



Eighty percent of new homes (built since 2009) have a high-efficiency clothes washer, including one-half with a high efficiency, front-loading machines. This suggests a continued, gradual market transformation as newer homes are added and replace some of the existing housing stock.



Over 90 percent of PNGC homes have an electric clothes dryer, statistically unchanged from previous surveys, illustrating the substantial fuel inertia for clothes drying. The use of moisture-sensors and increased saturations of high-efficiency clothes washers can decrease energy consumption for clothes drying.



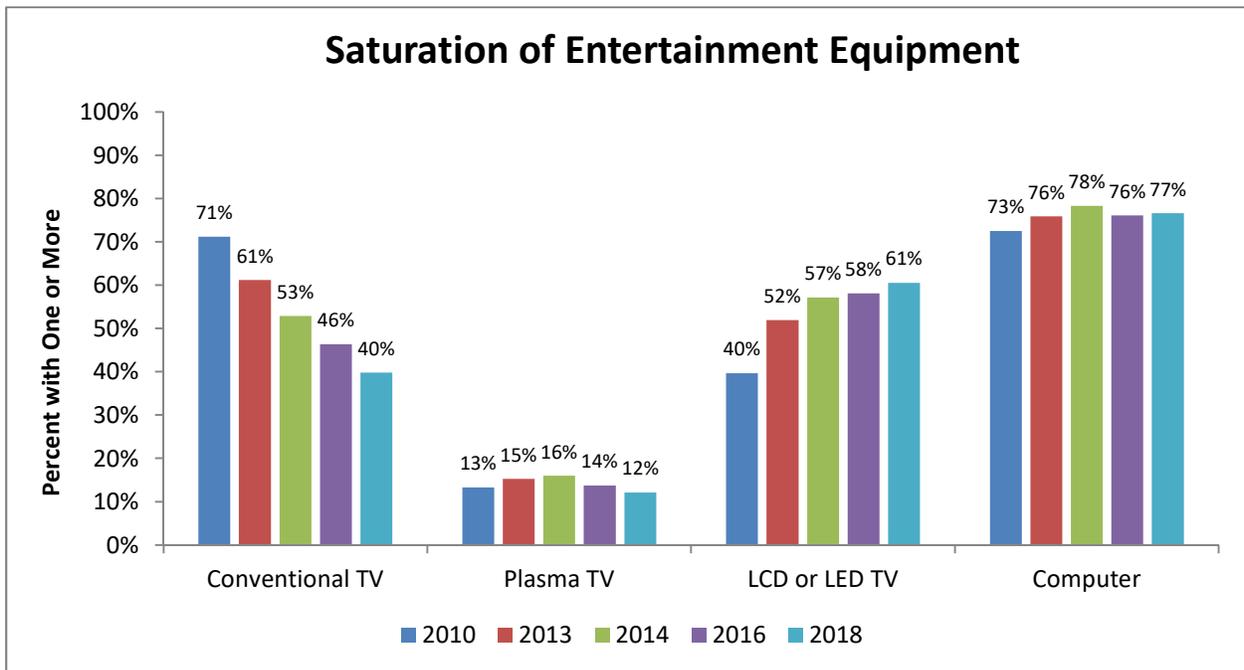
Entertainment Appliances

Televisions and computers can be substantial electricity users, and are used more hours per day than in the past. At the same time, technologies such as LED screens, laptops/tablets, and increased use of smart phones have placed downward pressure on electricity consumption per unit.

The survey asked about the number of televisions and computers owned, and also separated televisions by major equipment type. The key findings are as follows:

- Approximately 77 percent of homes have at least one home computer, a share that has remained relatively constant in recent surveys. One-third of homes have multiple computers.
- The share of homes with at least one LED or LCD television continues to increase, now exceeding 60 percent. The use of conventional (CRT) television sets continues to decline, and it is likely that many of these are now secondary units that are used less frequently.
- The use of plasma televisions plateaued around 16 percent, and now appears to be declining as older units are retired and replaced with LED units. Plasma televisions tend to be much less energy efficient than LED/LCD models.

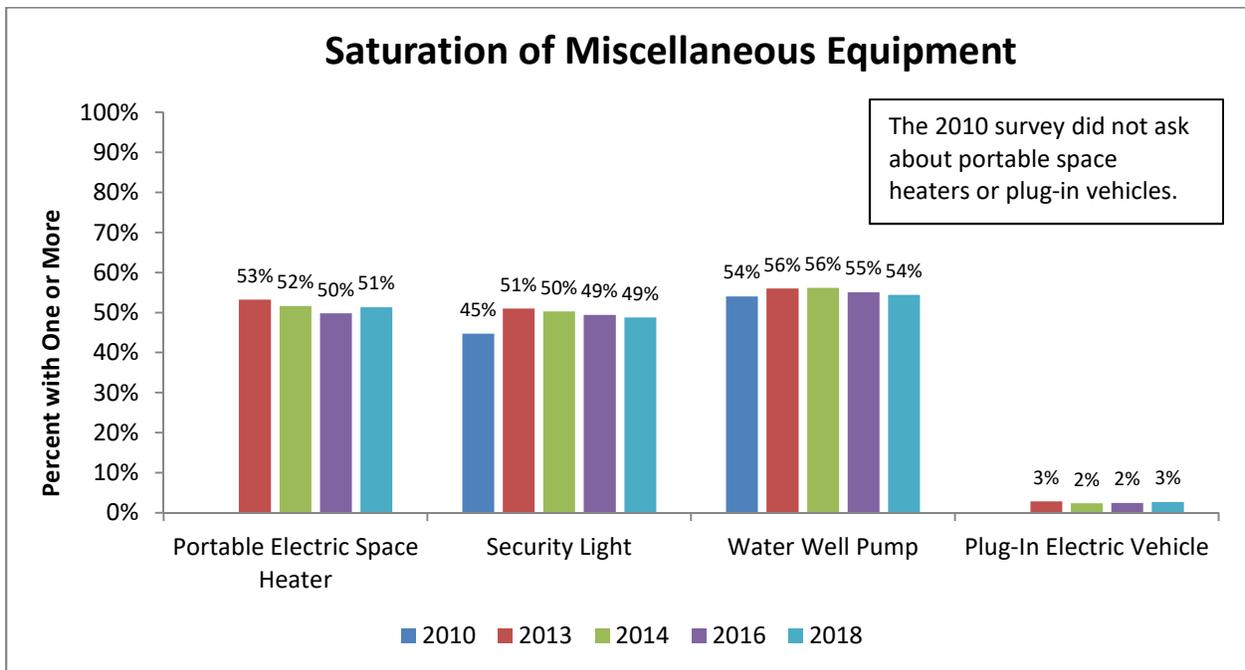
The following illustration compares home computer and television equipment saturations across the five PNGC surveys.



Other Energy Uses

In addition to major kitchen, laundry, and entertainment equipment, the survey asked about a number of miscellaneous devices that use electricity. The saturations of this equipment have not changed significantly over the past several years. The saturations of these other devices include:

- One-half of homes have at least one portable electric heater, similar to the last three surveys.
- About one-half of PNGC homes have a security light, similar to previous surveys.
- Slightly more than one-half of homes have a water well pump, similar to previous surveys.
- Few homes have a plug-in vehicle, and some of those captured in the survey may be smaller utility vehicles used on farms or within specific communities. This provides a baseline upon which to evaluate future survey data since this share is expected to increase in the future.



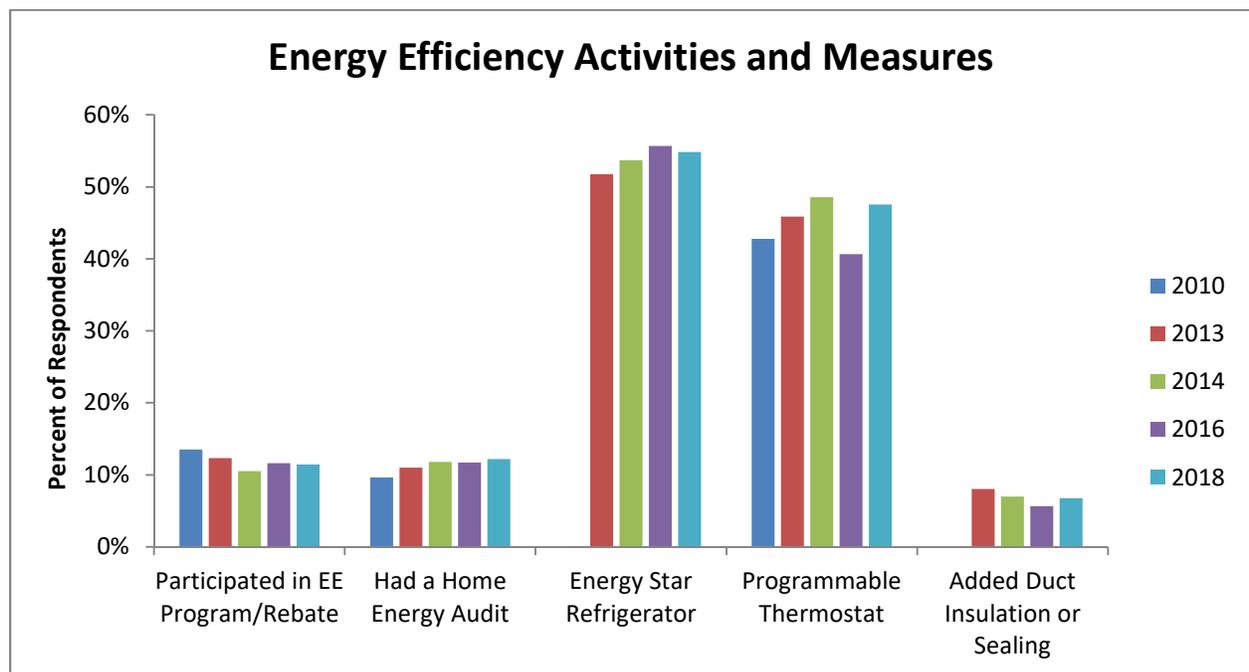
Energy Efficiency

Respondents were asked a number of questions about their conservation activities and energy-efficient measures used in their home. These questions help identify the potential for additional energy efficiency opportunities to support conservation planning efforts.

Approximately 11 percent of respondents had participated in an energy efficiency program and/or received an energy efficiency rebate within the past two years, and 12 percent have ever had a home energy audit. These rates of energy efficiency activities have not changed significantly in recent years, indicating that cooperatives' efforts have been sustained over time and continue to benefit a segment of members within the PNGC system.

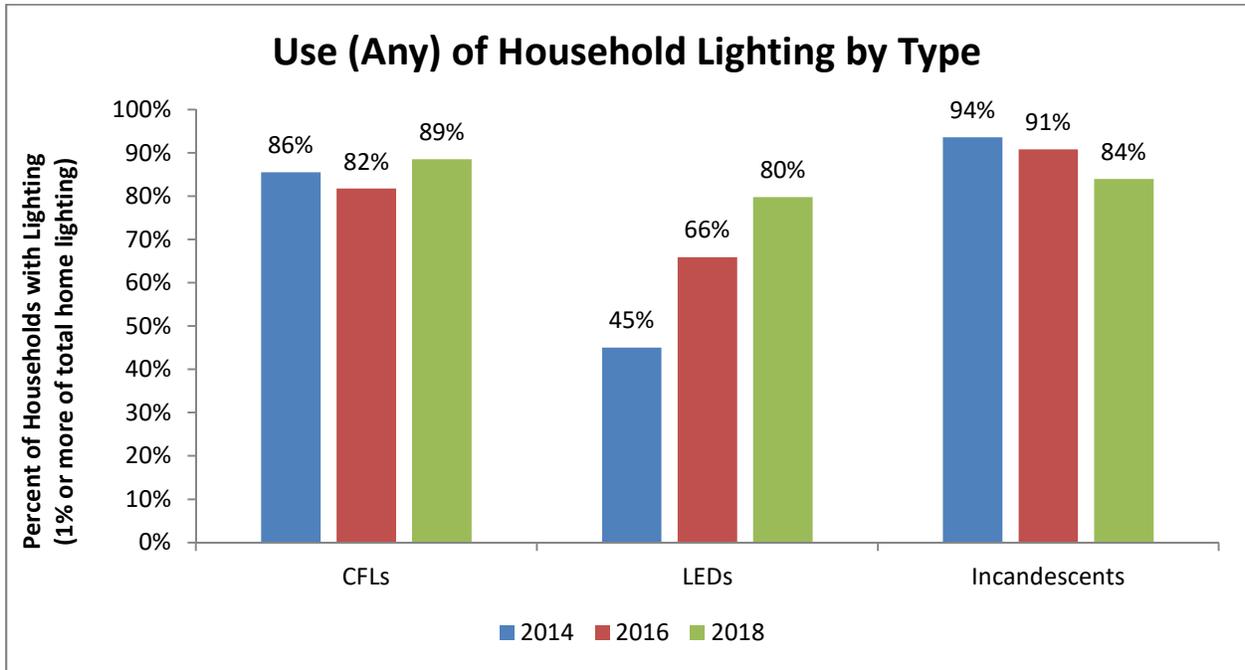
More than one-half of respondents have an Energy Star refrigerator and nearly one-half have programmable thermostats. It should be noted that programmable thermostat technologies have evolved significantly over the past decade, from manual to automated settings. The 2018 survey asked about "smart" thermostats (Nest, Hive, etc.) for the first time, and nine percent of respondents indicated that they had a "smart" thermostat (these are included with programmable thermostats in the graph below).

Less than ten percent of homes have added duct insulation or sealing within the last five years, indicating some continued potential to promote that measure within the membership.

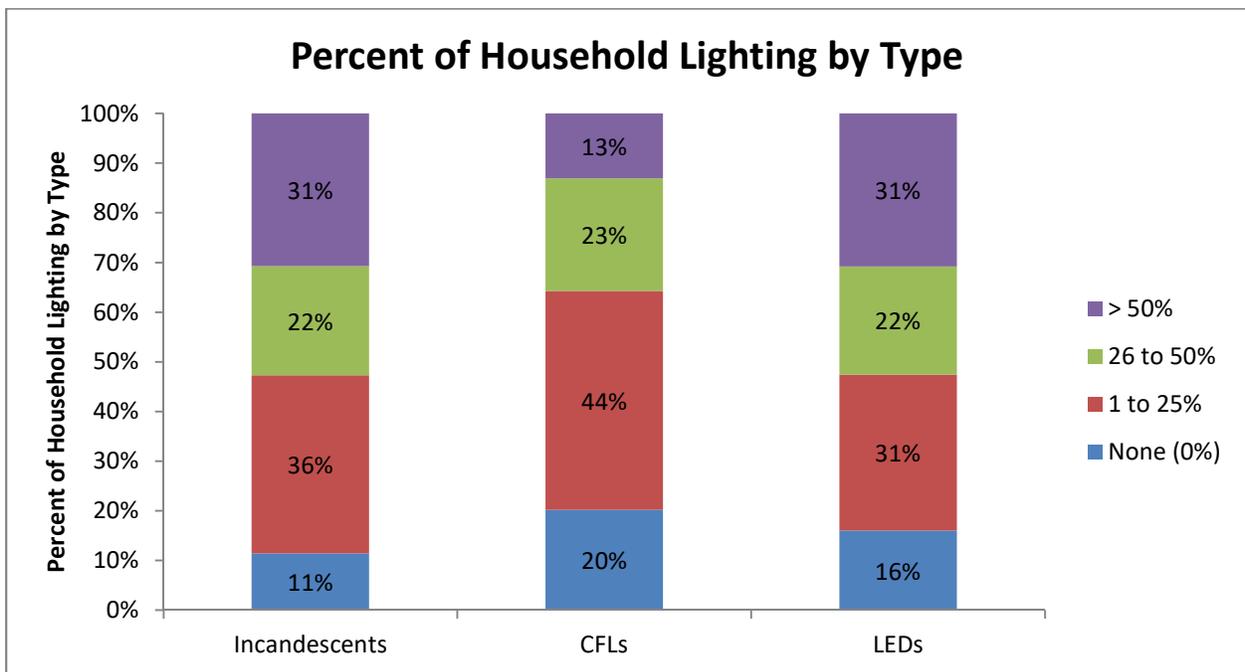


The survey further indicates that 14 percent of respondents had added wall, ceiling, or attic insulation within the past five years and 21 percent had replaced windows or doors. These questions have changed since previous surveys, so longitudinal comparisons are not possible.

Survey respondents provided their share of home lighting use comprised of incandescent, compact fluorescent (CFL), and light-emitting diode (LED) lighting. The saturation of LED lighting in the home has increased considerably since 2014, and can now be found in 80 percent of homes. This illustrates the rapid market transformation toward more energy efficient lighting.



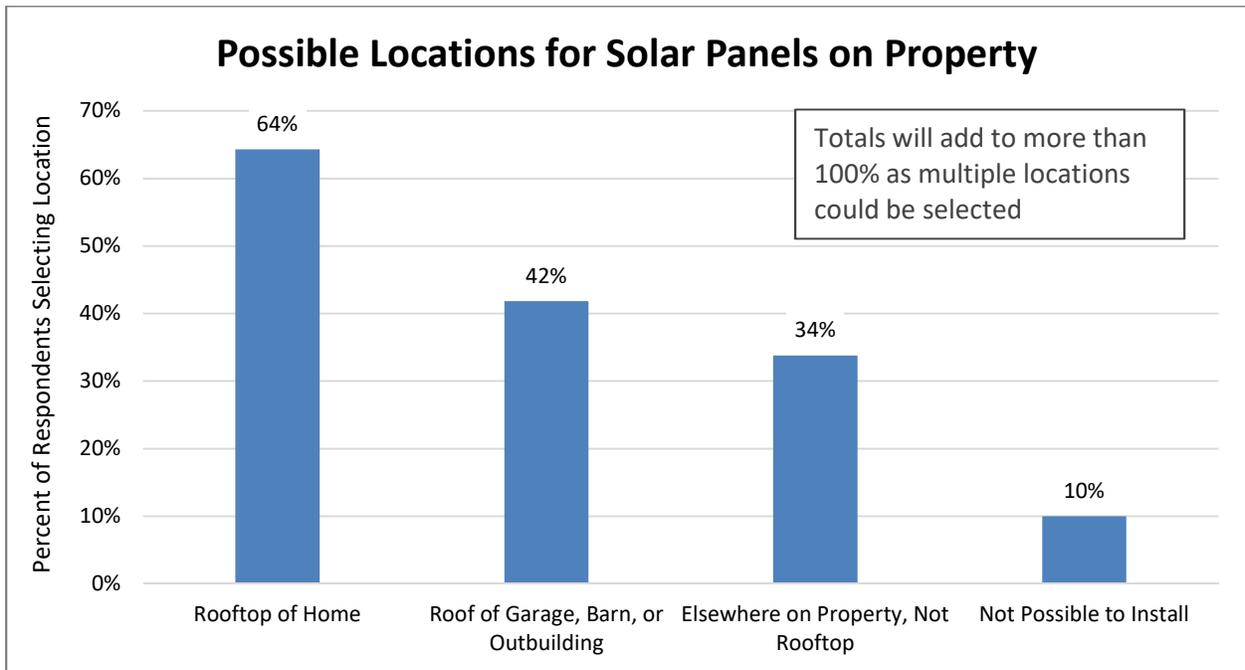
Further analysis of home lighting use indicates that LEDs are quickly displacing CFLs as the primary efficient lighting option, and the share of LED lighting use is nearly equal to incandescent use.



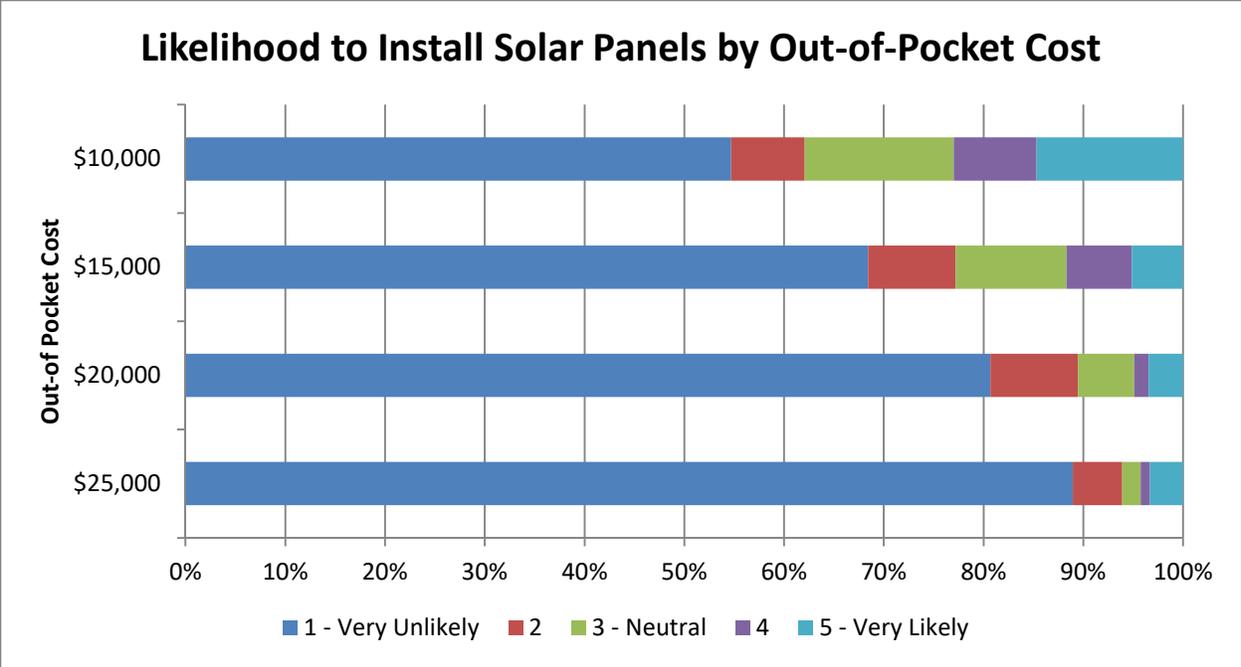
Solar Power

Survey respondents were asked a number of questions about their ability to install solar panels at their dwelling, their price sensitivity, their key motivations for installing solar panels, and their intentions to install solar panels on their property or participate in a community solar project.

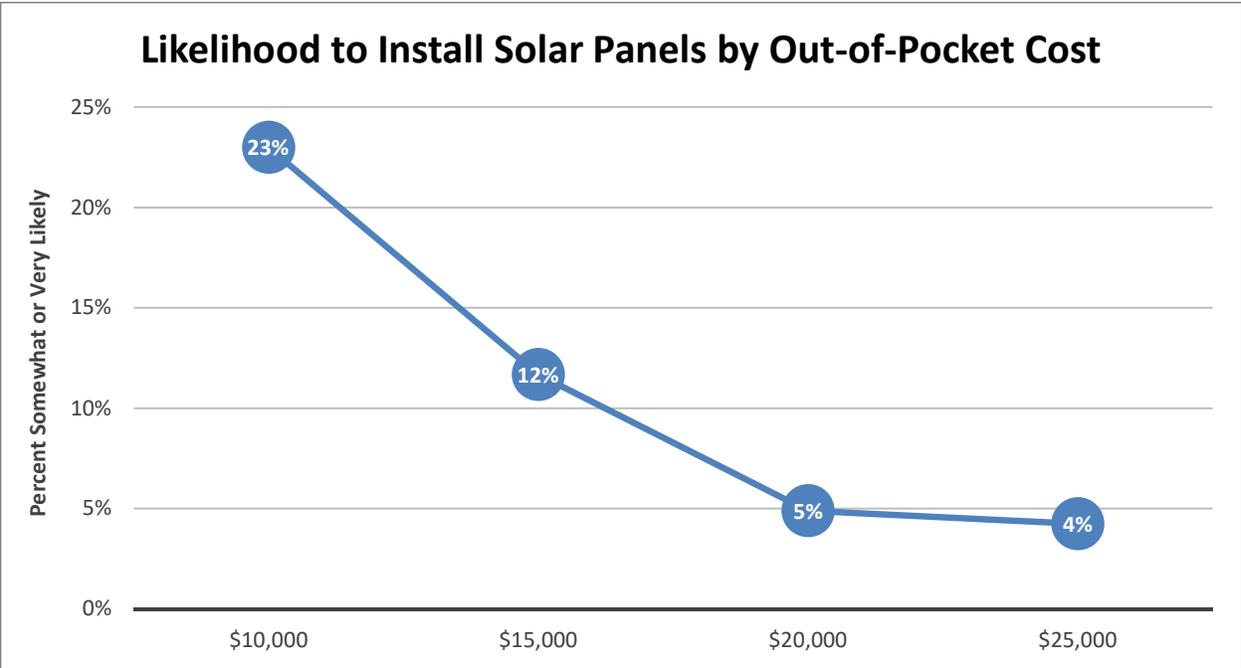
Approximately 90 percent of respondents indicated that it was physically possible to install solar panels at their property. Nearly two-thirds could install panels on their home’s rooftop, while one-third to one-half could install panels on a garage or outbuilding roof or somewhere else on their property. This indicates a substantial technical potential to install on-site solar within the PNGC system.



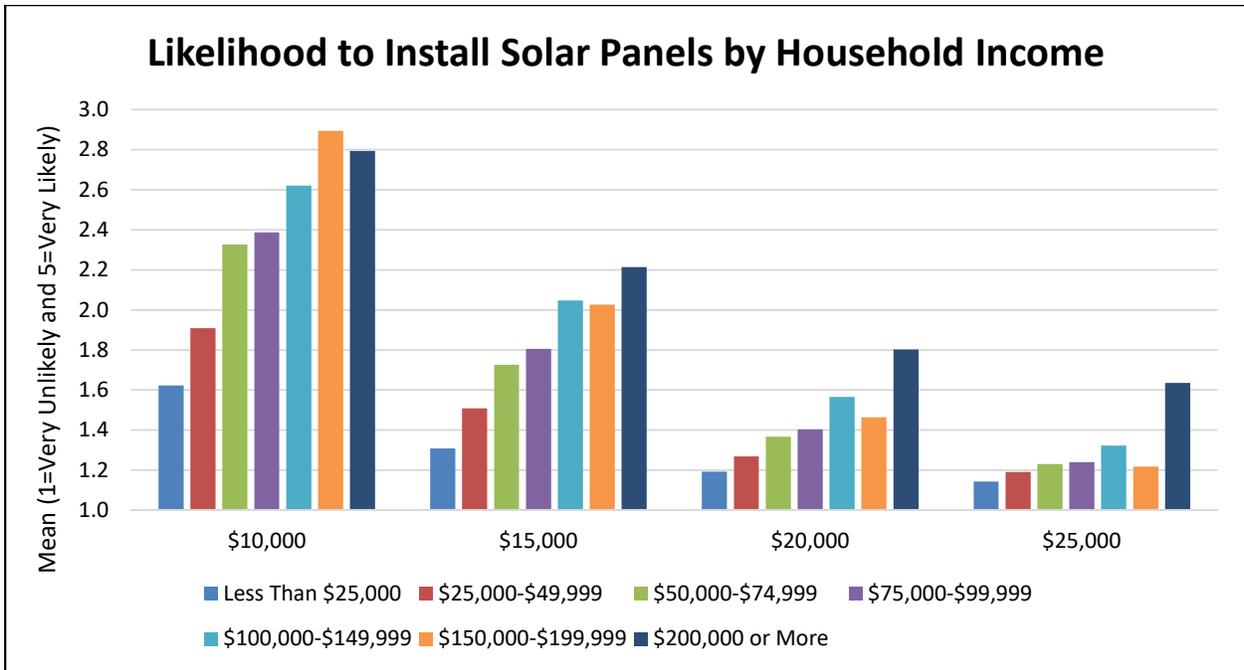
Respondents were asked about their likelihood to install solar panels at their property across a range of out-of-pocket installation costs. It was assumed that the panels installed would be sized to generate the majority of the property’s annual electricity consumption. For an out-of-pocket installation cost of \$10,000, approximately 15 percent of respondents were “very likely” to install solar panels, and another eight percent were somewhat likely. The likelihood of installing solar panels decreases sharply as out-of-pocket costs increase. For an out-of-pocket cost of \$25,000, nearly 90 percent of respondents were “very unlikely” to install solar panels on their home or property.



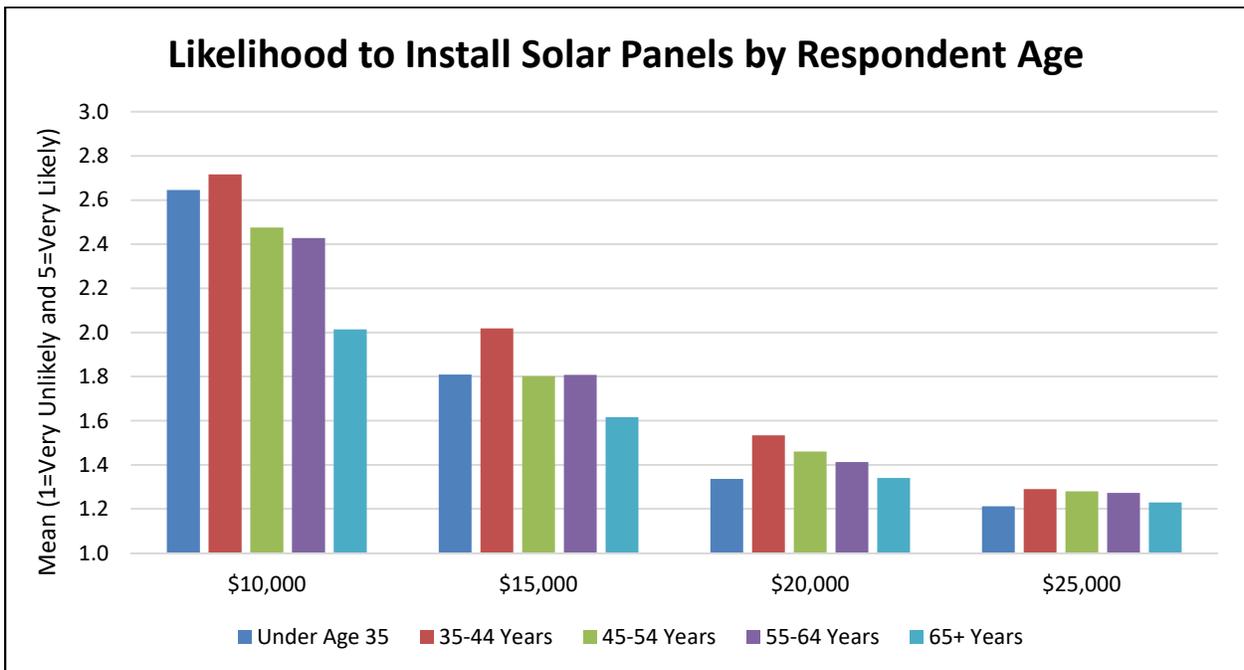
At an out-of-pocket installed cost of \$10,000, nearly one-fourth of respondents were somewhat or very likely to install solar panels at their property. This drops considerably to only five percent if out-of-pocket costs reach \$20,000, indicating the significant price sensitivity as costs increase. It also indicates that a program to help defray out-of-pocket costs could significantly increase participation.



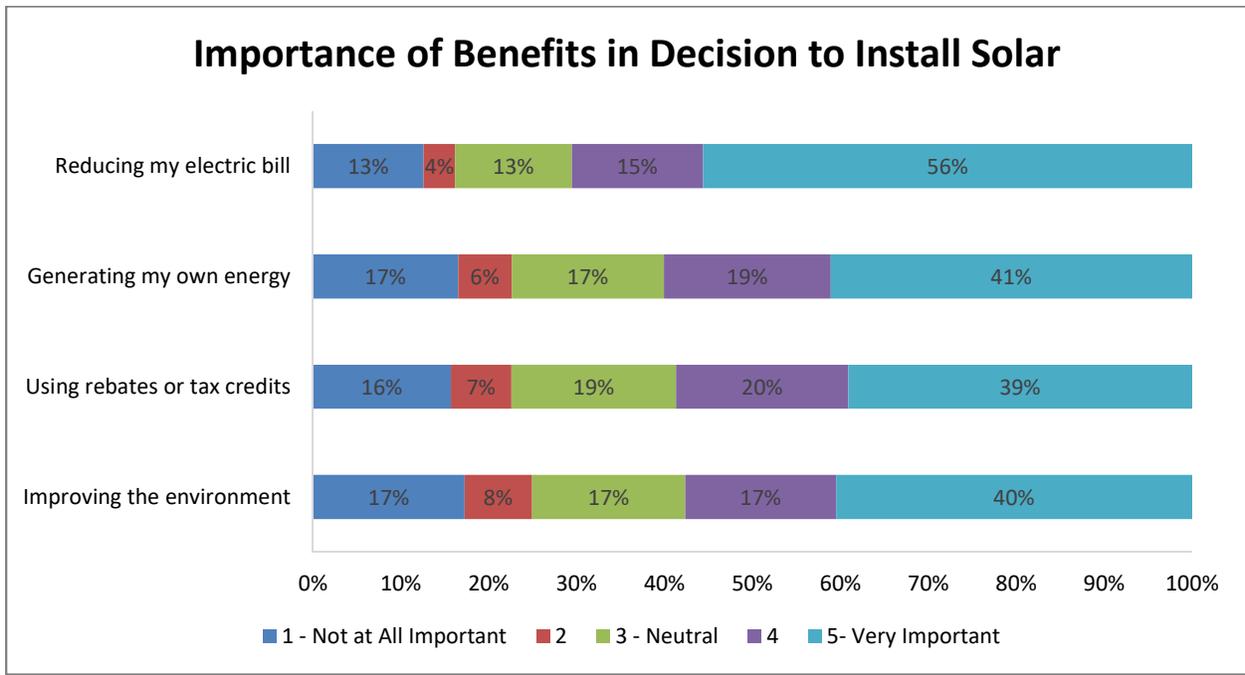
There is a strong correlation between household income and the likelihood to install solar panels at all out-of-pocket costs, but especially at higher cost levels for the highest income bracket.



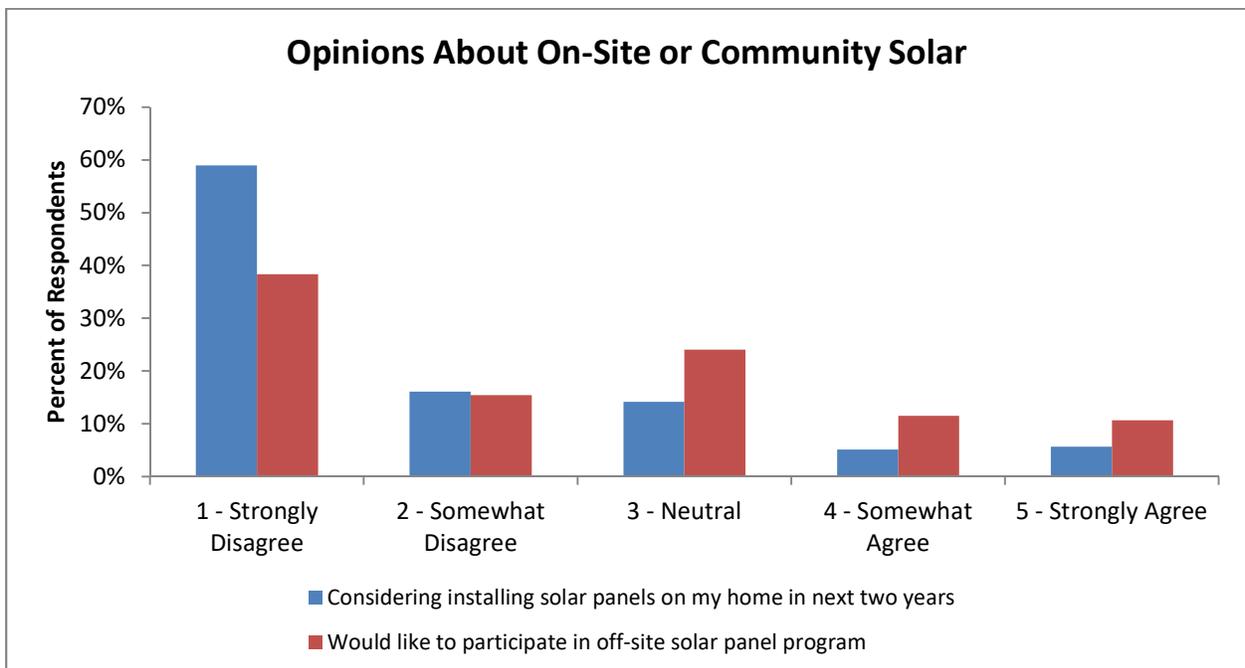
The likelihood of installing solar panels is the highest for respondents age 35 to 44. Older respondents are less likely to install solar panels at any out-of-pocket cost level, which may be indicative of income levels, attitudes toward the technology, or perspectives on making long-term investments. Younger respondents (under age 35) are also less likely to install solar panels, which may be correlated to income levels or the types of dwellings, including ownership status.



Consumers' most important motivation to install solar panels is reduction of their electric bill, with over one-half of respondents indicating that it was a "very important" benefit in their decision to install solar. The benefits of generating their own electricity, using rebates or tax credits, and improving the environment are all important benefits also, but rank somewhat below reducing their electric bill.



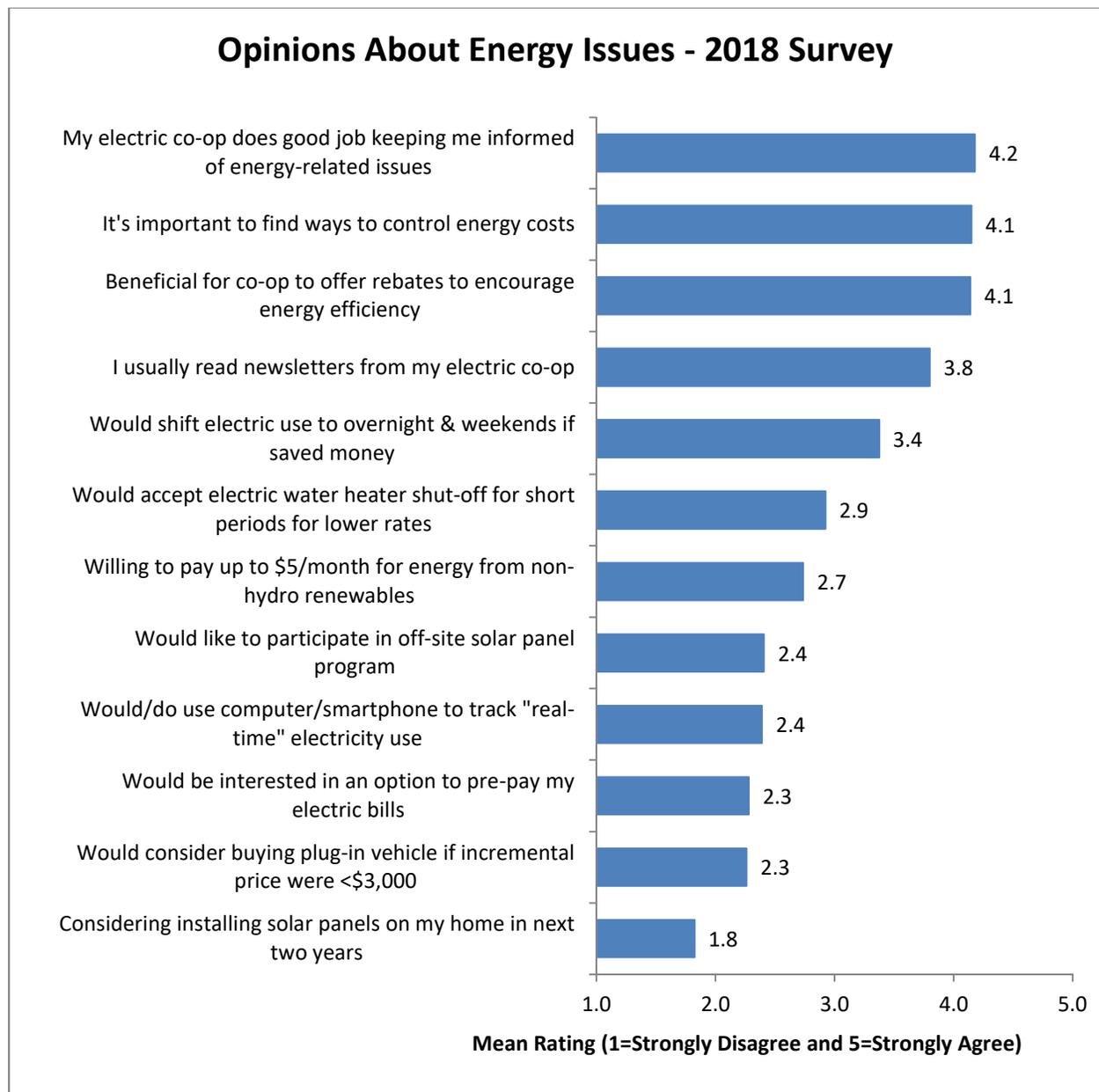
Respondents were asked about their likelihood to install solar panels in the next two years or to own solar panels off site (e.g. community solar). Respondents were approximately twice as likely to participate in an off-site ownership program than to install solar panels at their dwelling.



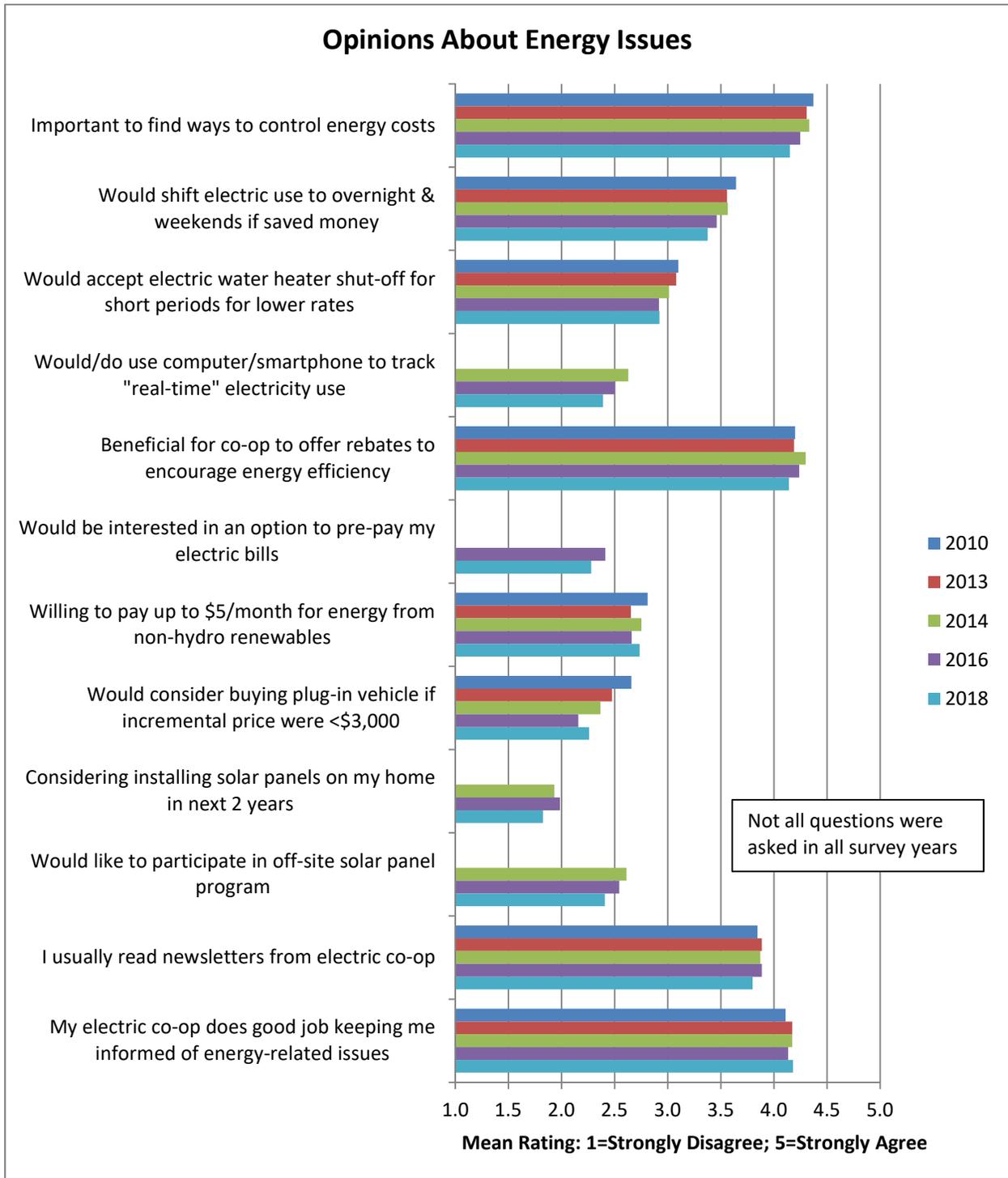
Opinions About Energy Issues

Respondents were asked several questions soliciting their opinions about energy use, energy policies, interest in renewable energy, and general information about their electric cooperative.

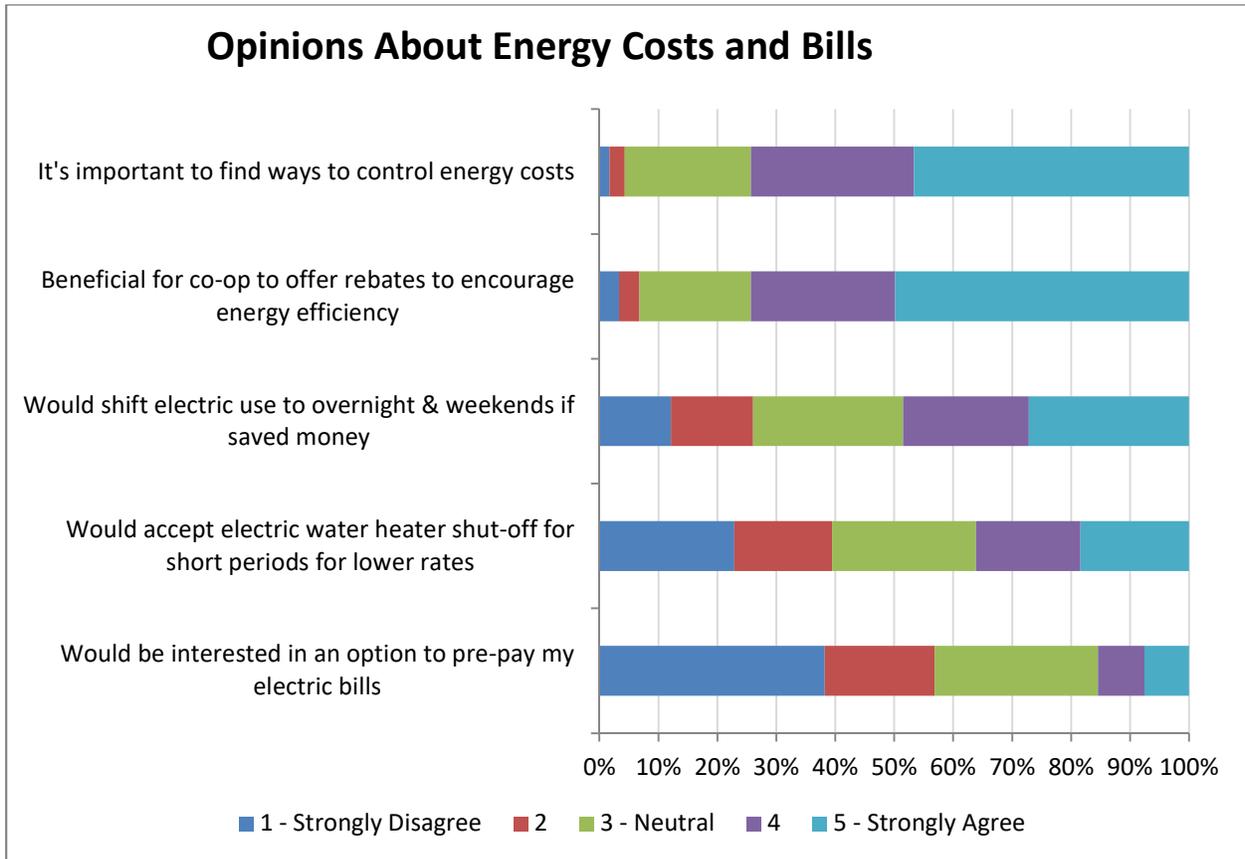
The strongest agreement was that cooperatives do a good job communicating with their membership, that it is important to find ways to control energy costs, and that it is beneficial for cooperatives to offer incentives to encourage energy efficiency. Respondents were least likely to agree with statements about their likelihood to install solar panels at their residence, considering buying a plug-in vehicle, or their interest in a program to pre-pay their electric bills.



Most consumer opinions have remained stable across the five surveys, as illustrated in the following figure. However, interest in plug-in vehicles appears to have declined somewhat, which may be partially due to lower gasoline prices in recent years. There are minor apparent declines over time regarding favorability of shifting electricity use to off-peak hours, water heater load control, and their desire to track “real-time” electricity use. These should continue to be monitored in future surveys.



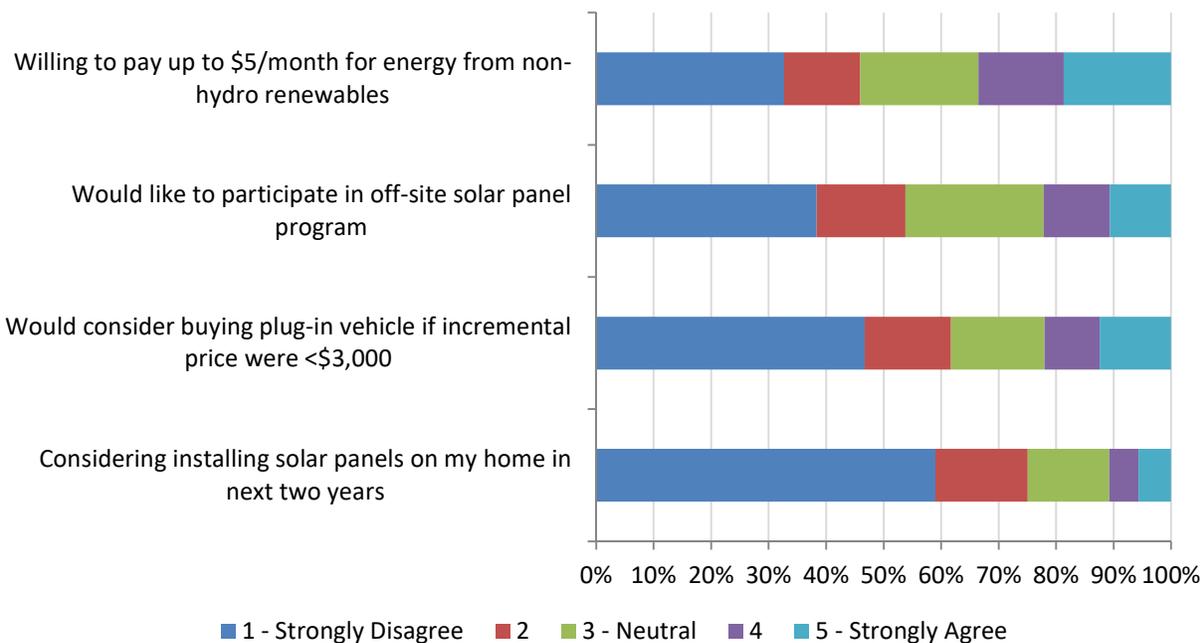
The detailed respondent opinions about topics related to energy costs and bills are illustrated in the following graph. Approximately one-half of respondents said that it was “very important” to find ways to control energy costs and for their cooperative to offer energy efficiency rebates. Nearly one-half of respondents were somewhat or very willing to shift electric use to off-peak hours if it saved money, although fewer would accept electric water heater shut-off for lower rates. Only a small segment would be interested in an option to pre-pay electric bills.



Respondents were also asked several questions about their interest in renewable energy, especially solar power. One-third of respondents were somewhat or very willing to pay extra for renewable power, and nearly one-quarter would consider purchasing a plug-in vehicle if the incremental costs were \$3,000 compared to a similar model without a battery.

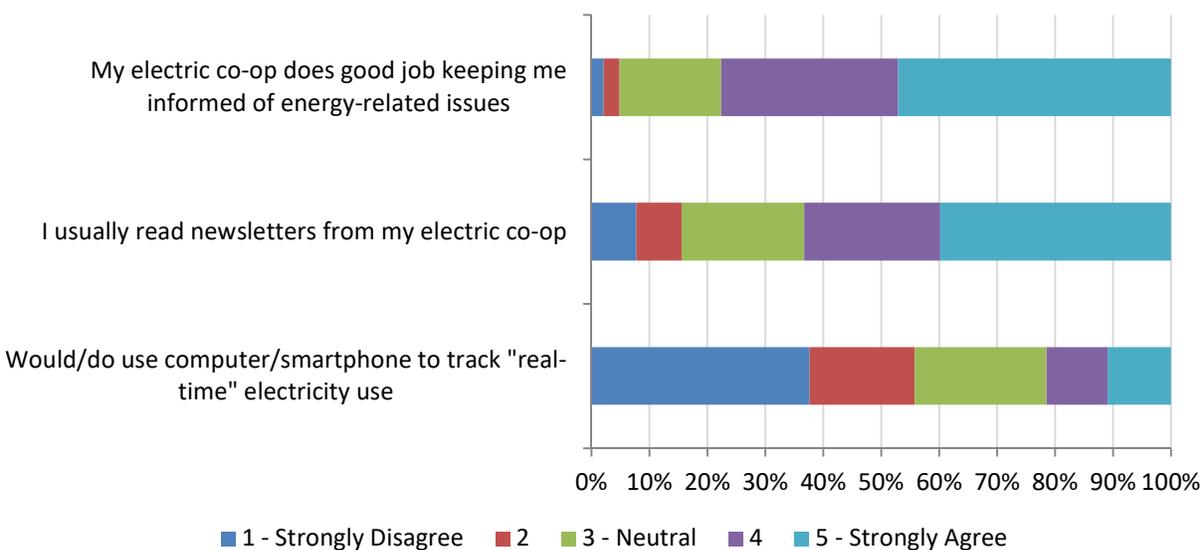
The solar opinions were also summarized previously with solar motivations, price sensitivity, and technical potential. About ten percent of respondents indicated that they were somewhat or very likely to install solar panels at their dwelling in the next two years. Although this is a relatively small share, the installation of solar panels at ten percent of residential accounts would still have a substantial impact on the energy sales of PNGC’s member systems. Over 20 percent of respondents would like to participate in a program to own or lease solar panels off-site, indicating that the potential for community solar or similar programs is greater than the potential for on-site ownership.

Opinions About Renewables and the Environment



Respondents were very pleased with the efforts of their cooperatives to keep them informed of energy issues, and readership of the cooperative newsletters is quite high. Only about 20 percent of respondents would like to use their computer or smart phone to track “real-time” electricity use, so this level of interaction may not find widespread value across the membership.

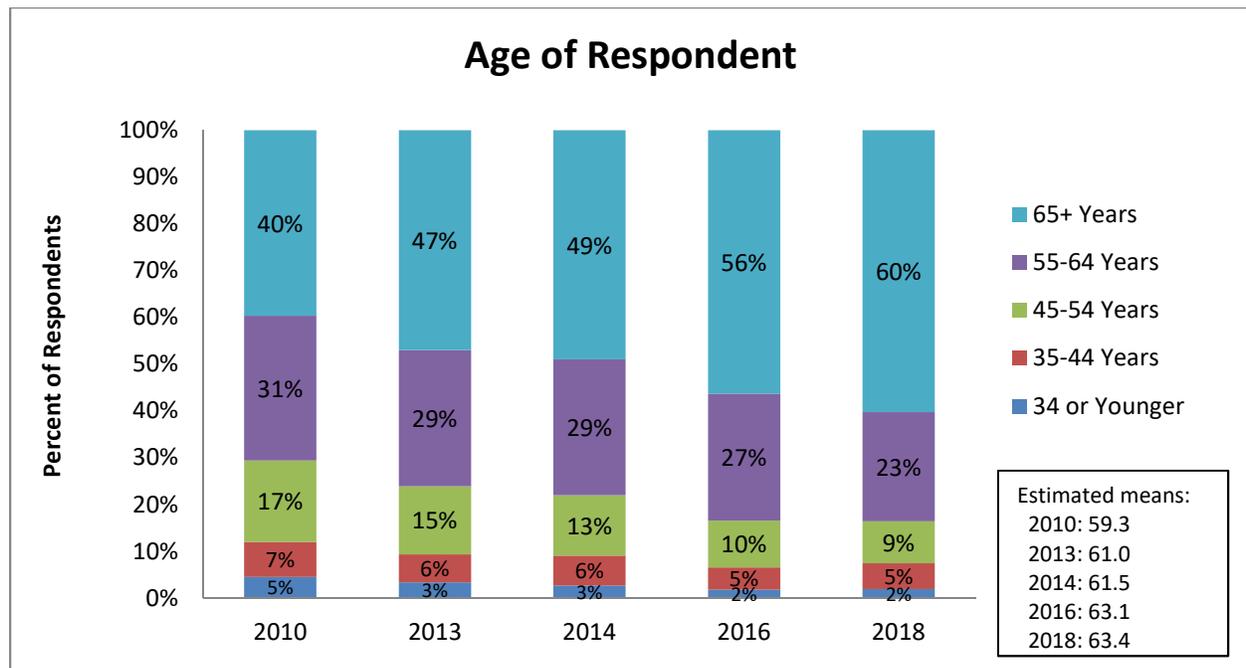
Opinions About Communications and Interactions



Demographics

Respondents were also asked about their age category, number of persons living in their household, number of years as a cooperative member, and household income. This information was compared to electricity consumption and other selected data in previous portions of this report.

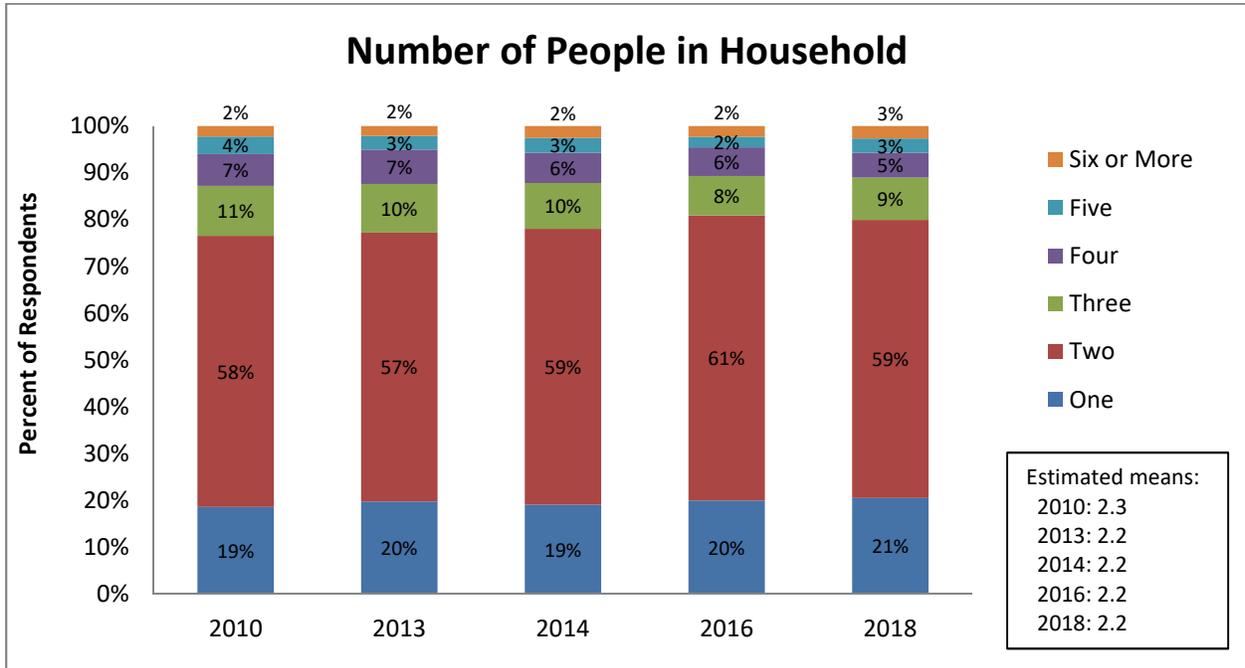
Over one-half of respondents are age 65 or older. This is typical of most mail or random phone surveys, as older persons are more likely to respond to surveys. The estimated average age of respondents continues to increase across survey years. Using the mid-point of the age ranges, it is estimated that the average survey respondent was 63.4 years old. This may partially reflect a shift in demographics within the systems' service territories and in the U.S. as a whole.



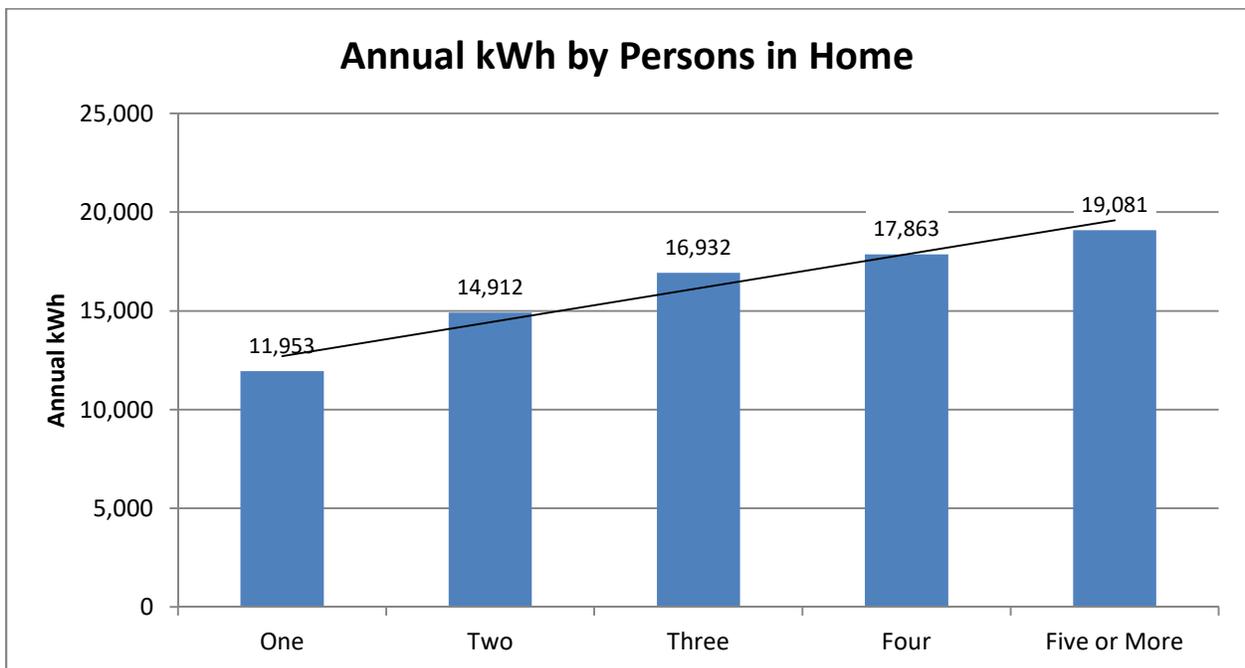
Older respondents are more likely to read their co-op's newsletters and agree that their co-op does a good job keeping them informed of energy issues. They are less likely to use real-time electricity data by computer or smart phone, to intend to own solar panels at their residence or off-site, or to be interested in an option to pre-pay their electric bills.

Respondents under age 35 are somewhat less likely to have some energy efficient items in their home and have a willingness to install solar panels at their dwelling. This may be influenced by the larger proportion of younger individuals renting their dwellings and/or with modest incomes. They also have slightly lower home internet service rates, but this may be due to increased internet access via cellular service, especially in single-occupant households.

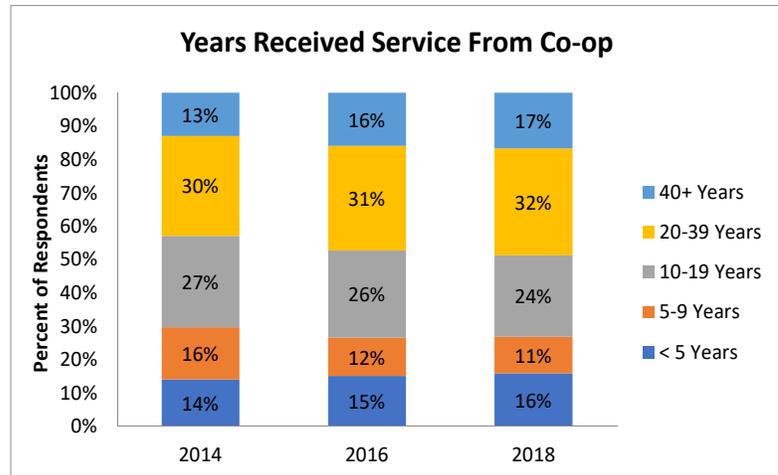
The average home has 2.2 residents, similar to the results from previous surveys. Census data typically estimates between 2.5 and 3.0 persons per household. The slightly lower survey results may reflect the strong response rates from older residents without children living in the home.



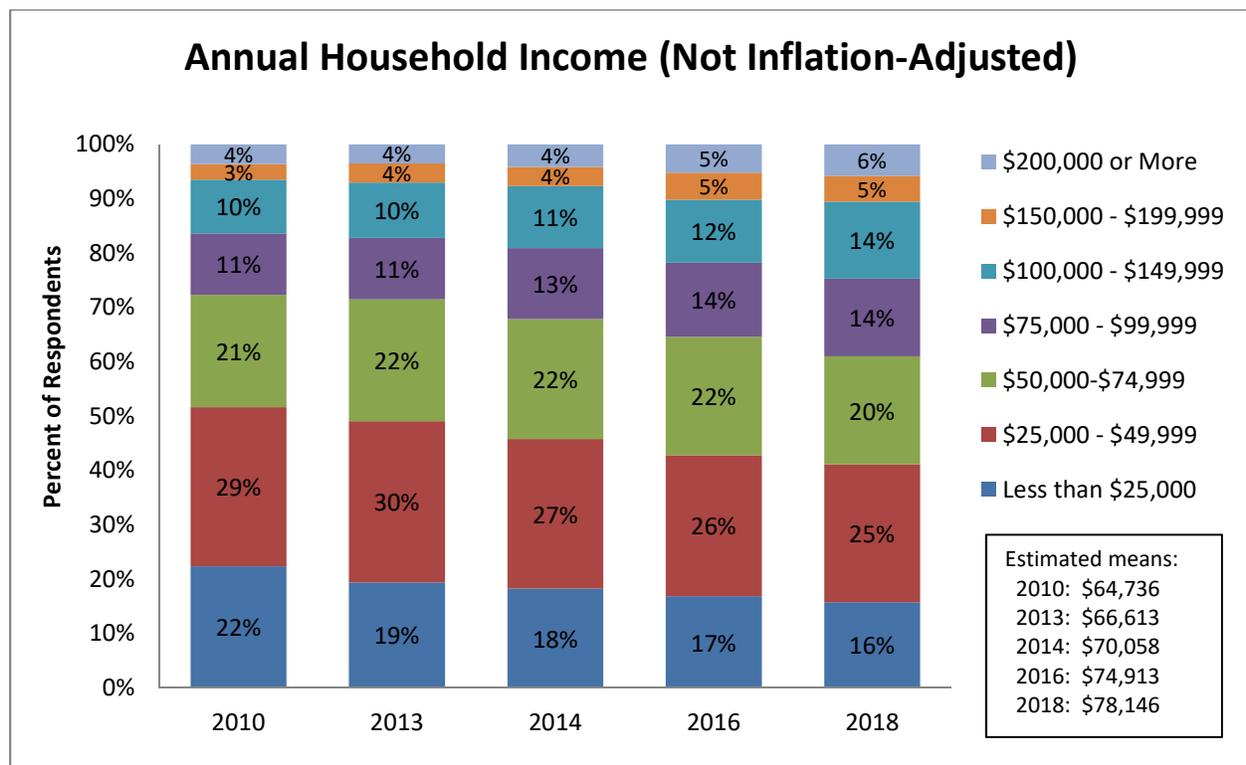
There is a correlation between the number of persons living in the home and average electricity consumption, which is plausible since several electricity uses such as laundry and water heating are correlated with the number of persons in the home.



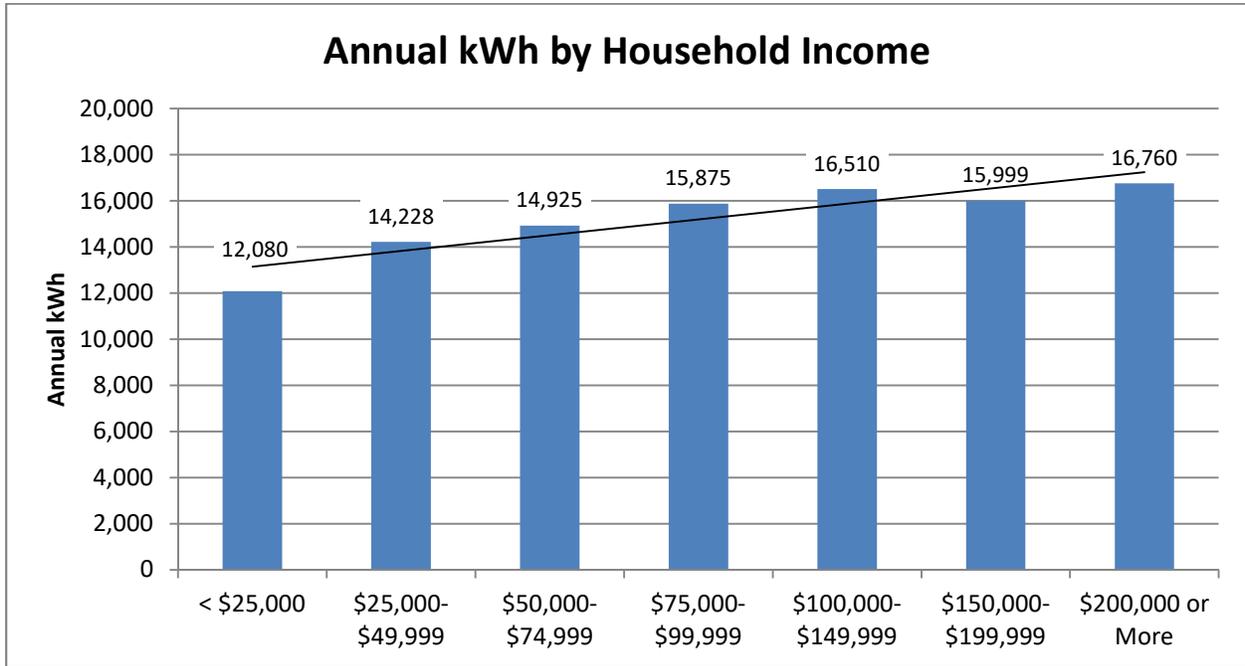
Nearly one-half of respondents have received service by their electric cooperative for at least 20 years, including 17 percent for 40 or more years. Longer-term members are more likely to read their co-op newsletters and to agree that their co-op does a good job of keeping them informed regarding energy issues. As one would expect, respondent age and length of membership are correlated.



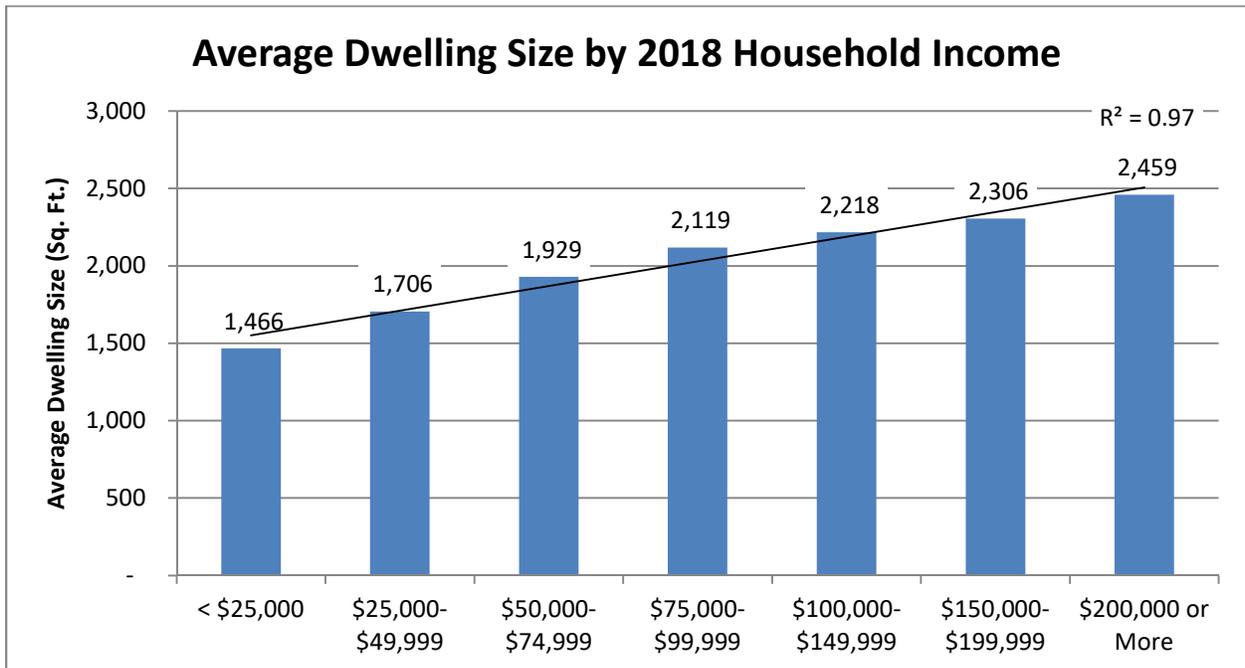
The estimated average household income has continued to increase across survey waves (not adjusted for inflation), and currently stands near \$80,000. It increased approximately 4.3 percent since 2016 and 11.5 percent since 2014. Higher incomes are correlated with the ability to purchase goods and services, which can include items that use electricity such as larger homes and more electronic devices. As noted previously, there is a strong correlation between higher incomes and the intention to purchase solar panels.



The correlation between 2018 household income and annual electricity use is illustrated in the following graph. Households earning less than \$25,000 use approximately 12,000 kWh annually, on average, while households earning more than \$200,000 use nearly 17,000 kWh annually.



A portion of this correlation is due to larger home sizes among higher earners, as suggested previously. The graph below illustrates the strong correlation between dwelling size and household income.



Recommendations for Future Surveys

The 2018 survey is the fifth conducted since 2010, allowing for longitudinal comparisons and identification of key trends across many questions that have been asked in multiple survey waves. As future surveys are completed, the longitudinal data will become more robust and will help clarify any changes and identify emerging trends.

The current survey asked more detailed questions about the willingness and motivations to install solar panels. Previous surveys have included detail about LED lighting, heat pump water heaters, pre-pay billing, and various other new information related to new technologies or potential offerings. Continuation of new questions in future surveys will allow tracking of trends that may impact future home energy use and the ability to capture new influences on energy consumption and attitudes. This is especially true of electric vehicles, which may be captured in more detail in subsequent surveys.

The remainder of this section includes a few recommendations to be considered for future surveys.

Future Survey Timing

Similar surveys should be conducted on a regular basis to track longitudinal trends and to provide fresh data for load forecasting and energy conservation planning studies. It is recommended that similar surveys be completed every two to four years, to coincide with PNGC's load forecasting and/or conservation planning studies. PNGC should schedule future surveys in the fall to provide information in advance of its conservation planning cycle and for consistency with recent survey timing.

Sample Design

The response rates in recent surveys have continued to decline, a phenomenon also experienced with similar surveys in other parts of the country. The next survey should use the response rates from the 2018 survey to determine the number of surveys to be sent for each cooperative.

Future surveys may begin to capture information electronically. This depends on the availability of current e-mail addresses among PNGC's member systems and the ability to capture a sufficient response rate from an electronic solicitation. Generally, surveys that mail a request to go on-line and complete a survey have significantly lower response rates than surveys initiated electronically with a link to the survey embedded in an e-mail.

Survey Uses and Downstream Applications

The survey was designed primarily to support load forecasting and conservation planning efforts. However, the survey data contains a wealth of information that may be valuable in other downstream applications. PNGC should examine the uses of the current survey and possible additional data needs to help maximize the value received from the surveying effort. Possible additional uses include policy assessments, marketing efforts, or "cluster" analysis of emerging technologies. This may include development of new questions or additional, in-depth analysis of the current data set.

Appendix A
2018 Survey Instrument

2018 ELECTRIC COOPERATIVE MEMBER SURVEY

To Our Residential Electric Members:

We are conducting a survey of residential members to gain valuable information for our power supply, energy efficiency, and strategic planning. Thank you for helping us by participating in this ten-minute survey about your home and energy use. Space is provided at the end of the survey to provide any additional comments or feedback that you may have. Please return this survey in the enclosed envelope by **October 20**. If you misplace the return envelope, we request that you return the form to:

Electric Cooperative Survey Processing
1050 Regent St., Suite L3
Madison, WI 53715-1263

Please answer all questions about the account to which this questionnaire was sent. For each question, please check or fill the **one** answer box that applies unless otherwise indicated.

1. How would you best describe the account to which this questionnaire was sent?

- 1 Year-round residence with a working farm
Number of acres operated in 2018: _____
- 2 Year-round residence without a working farm
- 3 Seasonal residence
- 4 Other type of residence: _____
- 5 Non-home account (Please skip to Q26)
Please describe: _____

2. What type of home is served by this account?

- 1 Single family house
- 2 Mobile home or trailer
- 3 Manufactured home
- 4 Townhouse, condominium, or duplex
- 5 Apartment building
- 6 Other: _____

3. What type of basement does this home have?

- 1 Full basement under the whole home
- 2 Crawl space under the whole home
- 3 Slab under the whole home (including mobile home)
- 4 Combination basement and crawl space
- 5 Combination crawl space and slab
- 6 Other: _____

4. When was this home built?

- 1 Before 1980
- 2 1980 to 1992
- 3 1993 to 2000
- 4 2001 to 2008
- 5 2009 or later
- 6 Don't know

5. What is the estimated size of this home?

- 1 Less than 1,000 square feet
- 2 1,000 to 1,499 square feet
- 3 1,500 to 1,999 square feet
- 4 2,000 to 2,499 square feet
- 5 2,500 to 2,999 square feet
- 6 3,000 to 3,499 square feet
- 7 3,500 to 3,999 square feet
- 8 4,000 square feet or more
- 9 Don't know

6. Do you have access to natural gas at this location?

- 1 Yes
- 2 No
- 3 Don't know

7. Do you have internet service at this home?

- 1 No
- 2 Yes, Fiber-optic
- 3 Yes, DSL
- 4 Yes, Cable
- 5 Yes, Satellite
- 6 Yes, Other: _____

HOME HEATING AND COOLING

8. What **fuel** (not heating system) provides your **primary** source of home heating? (*✓ only one*)

- 1 Electricity 2 Natural gas 3 LP gas/propane
 4 Fuel oil 5 Wood/pellets
 6 Other _____

9. What type of **primary heating equipment** (not fuel) do you have? (*✓ only one*)

- 1 Ground-source (geothermal) heat pump
 2 Air-to-air heat pump with ducts
 3 Ductless heat pump (no ducts)
 4 Electric baseboards or radiant panels
 5 Forced air furnace (ducts blowing heated air)
 6 Hot water or steam boiler (radiators or floor radiant)
 7 Wood burning or pellet stove
 8 Space heater(s) or fireplace for your primary heat
 9 Other: _____

10. How old is your **primary** heating equipment?

- 1 Under 5 years old 4 15-19 years old
 2 5-9 years old 5 20 or more years old
 3 10-14 years old 6 Don't know

11. What other **fuel(s)** (not heating system) do you use in addition to your primary fuel for home heating? (*✓ all that apply*)

- 1 None 2 Electricity 3 LP gas/propane
 4 Natural gas 5 Fuel oil 6 Wood/pellets
 7 Other: _____

12. What kind of air conditioning or cooling system do you have in your home? (*✓ primary system*)

- 1 None (or fans only)
 2 Central air (not a heat pump)
 3 Ground-source (geothermal) heat pump
 4 Air heat pump w/ducts 5 Ductless heat pump(s)
 6 Window, wall, or portable unit
 7 Other: _____

13. If you have any, how old is your cooling equipment? (*If you have a window air conditioner, the newest unit*)

- 1 Under 5 years old 4 15-19 years old
 2 5-9 years old 5 20 or more years old
 3 10-14 years old 6 Don't know

WATER HEATING & APPLIANCES

14. What type of water heater do you have? (*if you have more than one type, please ✓ the main one*)

- 1 Heat pump water heater (electric)
 2 Electric (not a heat pump)
 3 Natural gas
 4 LP gas/propane
 5 Other: _____
 6 No separate water heater (Skip to Q17)

15. What size water heater do you have? (*✓ only main one*)

- 1 Tankless/instantaneous 4 76 to 90 gallons
 2 50 gallons or less 5 More than 90 gallons
 3 51 to 75 gallons 6 Don't know

16. Approximately how old is your main water heater?

- 1 Under 5 years old 4 15-19 years old
 2 5-9 years old 5 20 or more years old
 3 10-14 years old 6 Don't know

17. What kind of kitchen stove/range do you have?

- 1 Electric 2 Natural gas 3 LP gas/propane
 4 None 5 Other: _____

18. What kind of clothes dryer do you have?

- 1 Electric 2 Natural gas 3 LP gas/propane
 4 None 5 Other: _____

19. What type of clothes washer do you have?

- 1 None 3 High efficiency, top load
 2 Standard efficiency 4 High efficiency, front load

20. For each electric appliance, please circle the number owned. Use "0" for none owned.

<u>Appliance</u>	<u>Number owned</u>			
Refrigerator (full-sized).....	0	1	2	3 or more
Separate food freezer.....	0	1	2	3 or more
Dishwasher.....	0	1	2	3 or more
Conventional television.....	0	1	2	3 or more
Plasma television.....	0	1	2	3 or more
LCD or LED television.....	0	1	2	3 or more
Computers (used regularly).....	0	1	2	3 or more
Portable electric heater.....	0	1	2	3 or more
Security light.....	0	1	2	3 or more
Water well pump (home use)....	0	1	2	3 or more
Plug-in electric vehicle.....	0	1	2	3 or more

ENERGY EFFICIENCY

SOLAR POWER

21. Have you participated in an energy efficiency program or received a rebate from your electric cooperative in the past two years?

- 1 Yes 2 No 3 Don't know

22. Have you ever had a home energy audit?

- 1 Yes 2 No 3 Don't know

23. Please indicate the approximate percentage of your household lighting that comes from the following lighting types: (*check a percent of lighting use for each type. Mark "None" for types that you don't use*)

	None (0%)	1 to 25%	26 to 50%	> 50%
a. Incandescent (traditional) lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. CFLs (compact fluorescent lights)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. LEDs (light-emitting diodes)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

24. Please indicate the energy efficient items you use in your home (*check all that apply*)

- a. _____ Energy Star refrigerator
 b. _____ Programmable thermostat
 c. _____ "Smart" thermostat

25. Please indicate the upgrades you have made at your home in the last five years (*check all that apply*)

- a. _____ Added insulation (wall, ceiling, attic, etc.)
 b. _____ Replaced windows or doors
 c. _____ Added duct insulation or duct sealing

26. Is it physically possible to locate solar panels at the following locations at your residence? (*check all that apply*)

- A On the rooftop of my home
 B On the roof of my garage, barn, or outbuilding
 C Elsewhere on my property, not a rooftop
 D Not possible to install solar panels at this location

If not possible, why not?

- Due to limitations of the roof or site
 Due to sunlight limitations at this location

27. How likely would you be (or were you) to install solar panels to meet your home's electricity needs for the following out-of-pocket costs? (*Respond for each price*)

Your Cost	Very Unlikely					Very Likely				
	1	2	3	4	5	1	2	3	4	5
(a) \$10,000	1	2	3	4	5	1	2	3	4	5
(b) \$15,000	1	2	3	4	5	1	2	3	4	5
(c) \$20,000	1	2	3	4	5	1	2	3	4	5
(d) \$25,000	1	2	3	4	5	1	2	3	4	5

28. If you were to consider (or have) solar panels at your home, how important are these benefits for your decision? (*Please circle your response for each benefit*)

Benefit	Not at all Important					Very Important				
	1	2	3	4	5	1	2	3	4	5
(a) Reducing my electric bill	1	2	3	4	5	1	2	3	4	5
(b) Improving the environment	1	2	3	4	5	1	2	3	4	5
(c) Using rebates or tax credits	1	2	3	4	5	1	2	3	4	5
(d) Generating my own energy	1	2	3	4	5	1	2	3	4	5

OTHER IMPORTANT INFORMATION

29. Age of the person completing this questionnaire:

- 1 Under age 35 4 55-64 years
 2 35-44 years 5 65 years or older
 3 45-54 years

30. Including yourself, how many persons are there in your household?

- 1 One 4 Four
 2 Two 5 Five
 3 Three 6 Six or more

31. Number of years you have received electric service from your electric cooperative:

- 1 Less than 5 years 4 20-39 years
 2 5-9 years 5 40 or more years
 3 10-19 years

32. Category that best describes your estimated 2018 household income (before taxes):

- 1 Less than \$25,000 5 \$100,000-\$149,999
 2 \$25,000-\$49,999 6 \$150,000-\$199,999
 3 \$50,000-\$74,999 7 \$200,000 or more
 4 \$75,000-\$99,999 8 Don't know/refused

ATTITUDES ABOUT ENERGY USE

This section contains statements about energy use in your home. Please rate each of the following statements using a scale from “1” to “5”, where “1” means “Strongly Disagree” and “5” means “Strongly Agree.” Please circle the number corresponding to your answer. Circle “9” if the statement is “Not Applicable” to you or your household.

	Strongly Disagree			Strongly Agree		NA
33. It is very important to me to find ways to control my energy costs.	1	2	3	4	5	9
34. I would actively shift electric use (dishwashing, laundry, etc.) to overnight and weekends if it saved me money.	1	2	3	4	5	9
35. I would accept my electric water heater (if applicable) being shut off for short periods if it meant lower costs and minimal disruption.	1	2	3	4	5	9
36. I would like to (or already do) use my computer or smart phone to track “real-time” (current) electricity use in my home.	1	2	3	4	5	9
37. It is beneficial for my electric cooperative to offer rebates to encourage energy efficiency.	1	2	3	4	5	9
38. I am interested in an option to pre-pay my electric bills.	1	2	3	4	5	9
39. I am willing to pay \$5 more per month for power from non-hydro renewable energy sources like wind, solar, or biomass.	1	2	3	4	5	9
40. I would consider buying a <u>plug-in</u> electric or hybrid car or truck if the <u>incremental</u> (extra compared to normal car) price was \$3,000 or less.	1	2	3	4	5	9
41. I am considering installing solar panels on my home or elsewhere at my property within the next two years.	1	2	3	4	5	9
42. I would be likely to participate in a program that allowed me to own solar panels, but off my property and I didn’t have to maintain them.	1	2	3	4	5	9
43. I usually read the member newsletters provided by my electric cooperative.	1	2	3	4	5	9
44. My electric cooperative does a good job keeping me informed of energy-related topics and issues.	1	2	3	4	5	9

Thank you for your participation in this important study. Feel free to add any comments, questions, or concerns you feel we should know about in the space below. If you would like us to answer your questions or if you want more information, please include your name and contact information:

COMMENTS, QUESTIONS OR CONCERNS

CONTACT INFORMATION (OPTIONAL)

NAME: _____

STREET: _____

TOWN: _____

ZIP CODE: _____

PHONE: _____

E-MAIL: _____

Appendix B
PNGC Weighted Frequency Tables

Q1 How would you best describe the account this questionnaire was sent to?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Year-Round Residence With a Farm	649	12.6	12.8	12.8
	Year-Round Residence w/o a Farm	3737	72.6	73.5	86.2
	Seasonal Residence	633	12.3	12.4	98.7
	Other Type of Residence	54	1.0	1.1	99.7
	Non-Home Account	11	.2	.2	100.0
	Seasonal Residence With a Farm	2	.0	.0	100.0
	Total	5086	98.7	100.0	
Missing	No Response	65	1.3		
Total		5151	100.0		

Q2 What type of home is served by this account?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single Family House	3918	76.1	76.6	76.6
	Mobile Home or Trailer	263	5.1	5.1	81.8
	Manufactured Home	598	11.6	11.7	93.5
	Townhouse, Condominium, or Duplex	120	2.3	2.3	95.8
	Apartment Building	54	1.0	1.1	96.9
	Other	159	3.1	3.1	100.0
		Total	5112	99.2	100.0
Missing	N/A - Non-Home Account	11	.2		
	No Response	28	.5		
	Total	39	.8		
Total		5151	100.0		

Q3 What type of basement does this home have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full Basement Under Whole Home	610	11.8	12.0	12.0
	Crawl Space Under the Whole Home	2949	57.2	58.1	70.1
	Slab Under the Whole Home	430	8.3	8.5	78.6
	Combo Basement and Crawl Space	326	6.3	6.4	85.0
	Combination Crawl Space and Slab	461	8.9	9.1	94.1
	Other	183	3.6	3.6	97.7
	None	117	2.3	2.3	100.0
		Total	5076	98.5	100.0
Missing	N/A - Non-Home Account	11	.2		
	No Response	64	1.3		
	Total	75	1.5		
Total		5151	100.0		

Q4 When was this home built?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Before 1980	1829	35.5	36.9	36.9
	1980 to 1992	995	19.3	20.1	57.0
	1993 to 2000	863	16.8	17.4	74.4
	2001 to 2008	820	15.9	16.6	91.0
	2009 or Later	447	8.7	9.0	100.0
		Total	4954	96.2	100.0
Missing	Don't Know	138	2.7		
	N/A - Non-Home Account	11	.2		
	No Response	48	.9		
	Total	197	3.8		
Total		5151	100.0		

Q5 What is the estimated size of this home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than 1,000 Sq Ft	415	8.1	8.5	8.5
	1,000 to 1,499 Sq Ft	1228	23.8	25.1	33.5
	1,500 to 1,999 Sq Ft	1303	25.3	26.6	60.1
	2,000 to 2,499 Sq Ft	882	17.1	18.0	78.1
	2,500 to 2,999 Sq Ft	490	9.5	10.0	88.1
	3,000 to 3,499 Sq Ft	302	5.9	6.2	94.3
	3,500 to 3,999 Sq Ft	119	2.3	2.4	96.7
	4,000 Sq Ft or More	162	3.1	3.3	100.0
	Total	4900	95.1	100.0	
Missing	Don't Know	166	3.2		
	N/A - Non-Home Account	11	.2		
	No Response	74	1.4		
	Total	251	4.9		
Total		5151	100.0		

Q6 Do you have access to natural gas at this location?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	789	15.3	15.5	15.5
	No	3946	76.6	77.7	93.2
	Don't Know	347	6.7	6.8	100.0
	Total	5081	98.6	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	59	1.1		
	Total	70	1.4		
Total		5151	100.0		

Q7 Do you have Internet service at this home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	888	17.2	17.6	17.6
	Yes, Fiber-optic	381	7.4	7.6	25.1
	Yes, DSL	1115	21.7	22.1	47.2
	Yes, Cable	1110	21.5	22.0	69.2
	Yes, Satellite	928	18.0	18.4	87.6
	Yes, Other	625	12.1	12.4	100.0
	Total	5047	98.0	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	93	1.8		
	Total	104	2.0		
Total		5151	100.0		

Q8GRP PRIMARY HOME HEATING FUEL TYPE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electricity	2802	54.4	54.9	54.9
	Natural Gas	525	10.2	10.3	65.2
	LP Gas/Propane	508	9.9	9.9	75.1
	Fuel Oil	72	1.4	1.4	76.5
	Wood/Pellets	911	17.7	17.9	94.4
	Other	5	.1	.1	94.5
	Electricity Combo	245	4.8	4.8	99.3
	Other Combo	36	.7	.7	100.0
	Total	5104	99.1	100.0	
Missing	N/A - Non-Home Acct	11	.2		
	No Response	36	.7		
	Total	47	.9		
Total		5151	100.0		

Q9GRP PRIMARY HEATING EQUIPMENT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Ground Source (Geothermal) Ht Pump	97	1.9	1.9	1.9
	Air-to-Air Heat Pump with Ducts	1054	20.5	20.7	22.7
	Ductless Heat Pump (No Ducts)	258	5.0	5.1	27.8
	Electric Baseboards or Radiant Panels	556	10.8	10.9	38.7
	Forced Air Furnace (Ducts Blowing Air)	1462	28.4	28.8	67.5
	Hot Water or Steam Boiler	181	3.5	3.6	71.1
	Wood Burning Stove (Including Pellet)	772	15.0	15.2	86.3
	Space Heater(s) or Fireplace	346	6.7	6.8	93.1
	Other	16	.3	.3	93.4
	Combination	336	6.5	6.6	100.0
	Total	5080	98.6	100.0	
Missing	N/A - Non-Home Acct	11	.2		
	No Response	60	1.2		
	Total	71	1.4		
Total		5151	100.0		

§Q11 Frequencies

		Responses		Percent of Cases
		N	Percent	
§Q11 OTHER FUEL USE IN ADDITION TO PRIMARY FUEL ^a	Q11.1 No other home heat fuels used	1582	28.7%	30.8%
	Q11.2 Other fuels: Electricity	1412	25.6%	27.5%
	Q11.3 Other fuels: LP gas/propane	743	13.5%	14.5%
	Q11.4 Other fuels: Natural gas	127	2.3%	2.5%
	Q11.5 Other fuels: Fuel oil	56	1.0%	1.1%
	Q11.6 Other fuels: Wood or pellets	1415	25.6%	27.5%
	Q11.7 Other fuels: Other	42	.8%	.8%
	Q11X NO RESPONSE	141	2.6%	2.7%
Total		5518	100.0%	107.4%

Q12 What kind of air conditioning or cooling system do you have in your home?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None/Fans Only	2030	39.4	39.9	39.9
	Central Air (Not a Heat Pump)	564	10.9	11.1	51.0
	Ground-Source (Geo) Heat Pump	133	2.6	2.6	53.6
	Air Heat Pump with Ducts	1313	25.5	25.8	79.4
	Ductless Heat Pump(s)	369	7.2	7.3	86.7
	Window/Wall/Portable Unit	616	12.0	12.1	98.8
	Other	62	1.2	1.2	100.0
	Total	5087	98.8	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	53	1.0		
	Total	64	1.2		
Total		5151	100.0		

Q13 If you have any, how old is your cooling equipment?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 5 Years Old	1085	21.1	39.0	39.0
	5-9 Years Old	605	11.7	21.7	60.7
	10-14 Years Old	481	9.3	17.3	78.0
	15-19 Years Old	294	5.7	10.6	88.6
	20 or More Years Old	317	6.1	11.4	100.0
	Total	2781	54.0	100.0	
Missing	Don't Know	176	3.4		
	N/A - No AC	2030	39.4		
	N/A - Non-Home Account	11	.2		
	No Response	153	3.0		
	Total	2370	46.0		
Total		5151	100.0		

Q14GRP What type of water heater do you have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Heat Pump Water Heater (Electric)	246	4.8	4.9	4.9
	Electric (Not a Heat Pump)	3867	75.1	76.4	81.3
	Natural Gas	456	8.9	9.0	90.3
	LP Gas/Propane	401	7.8	7.9	98.2
	Other	33	.6	.7	98.9
	No Separate Water Heater	16	.3	.3	99.2
	Electric Combination	35	.7	.7	99.9
	Other Combination	4	.1	.1	100.0
	Total	5059	98.2	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	81	1.6		
	Total	92	1.8		
Total		5151	100.0		

Q15 What size water heater do you have?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tankless/Instantaneous	213	4.1	4.9	4.9
	50 Gallons or Less	2582	50.1	59.4	64.3
	51 to 75 Gallons	1084	21.0	25.0	89.3
	76 to 90 Gallons	367	7.1	8.5	97.8
	More Than 90 Gallons	98	1.9	2.2	100.0
	Total	4344	84.3	100.0	
Missing	Don't Know	577	11.2		
	N/A - No Separate Water Heater	16	.3		
	N/A - Non-Home Account	11	.2		
	No Response	203	3.9		
	Total	807	15.7		
Total		5151	100.0		

Q16 Approximately how old is your main water heater?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 5 Years Old	1284	24.9	27.8	27.8
	5-9 Years Old	1167	22.7	25.3	53.1
	10-14 Years Old	975	18.9	21.1	74.2
	15-19 Years Old	619	12.0	13.4	87.7
	20 or More Years Old	569	11.1	12.3	100.0
	Total	4614	89.6	100.0	
Missing	Don't Know	428	8.3		
	N/A - No Separate Water Heater	16	.3		
	N/A - Non-Home Account	11	.2		
	No Response	82	1.6		
	Total	537	10.4		
Total		5151	100.0		

Q17GRP TYPE OF KITCHEN RANGE/STOVE

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electric	3721	72.2	73.2	73.2
	Natural Gas	274	5.3	5.4	78.6
	LP Gas/Propane	911	17.7	17.9	96.5
	None	14	.3	.3	96.8
	Other	18	.3	.3	97.2
	Electric Combination	138	2.7	2.7	99.9
	Other Combination	6	.1	.1	100.0
	Total	5081	98.6	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	59	1.1		
	Total	70	1.4		
Total		5151	100.0		



Q18GRP TYPE OF CLOTHES DRYER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Electric	4637	90.0	91.2	91.2
	Natural Gas	104	2.0	2.0	93.3
	LP Gas/Propane	141	2.7	2.8	96.1
	None	191	3.7	3.8	99.8
	Other	5	.1	.1	99.9
	Electric Combination	5	.1	.1	100.0
	Total	5083	98.7	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	57	1.1		
	Total	68	1.3		
Total	5151	100.0			

Q19GRP TYPE OF CLOTHES WASHER

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	181	3.5	3.6	3.6
	Standard Efficiency	1675	32.5	33.0	36.6
	High Efficiency, Top Load	1504	29.2	29.6	66.2
	High Efficiency, Front Load	1699	33.0	33.5	99.6
	Combination	18	.4	.4	100.0
	Total	5078	98.6	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	62	1.2		
	Total	73	1.4		
Total	5151	100.0			

For each electric appliance, please circle the number owned. Use "0" for none owned.

		None	One	Two	Three or More	Total
Q20A Number: Refrigerator (full-sized)	Weighted Count	44	3147	1684	218	5093
	Row N %	.9%	61.8%	33.1%	4.3%	100.0%
Q20B Number: Separate freezer	Weighted Count	1679	2486	707	222	5093
	Row N %	33.0%	48.8%	13.9%	4.4%	100.0%
Q20C Number: Dishwasher	Weighted Count	990	4000	85	18	5093
	Row N %	19.4%	78.5%	1.7%	.3%	100.0%
Q20D Number: Conventional television	Weighted Count	3065	1178	525	325	5093
	Row N %	60.2%	23.1%	10.3%	6.4%	100.0%
Q20E Number: Plasma television	Weighted Count	4477	440	113	64	5093
	Row N %	87.9%	8.6%	2.2%	1.2%	100.0%
Q20F Number: LCD or LED television	Weighted Count	2009	1468	935	682	5093
	Row N %	39.4%	28.8%	18.4%	13.4%	100.0%
Q20G Number: Computers (used regularly)	Weighted Count	1191	2315	1200	388	5093
	Row N %	23.4%	45.4%	23.6%	7.6%	100.0%
Q20H Number: Portable electric heater	Weighted Count	2482	1539	786	287	5093
	Row N %	48.7%	30.2%	15.4%	5.6%	100.0%
Q20I Number: Security light	Weighted Count	2611	1393	617	473	5093
	Row N %	51.3%	27.4%	12.1%	9.3%	100.0%
Q20J Number: Water well pump (home use)	Weighted Count	2323	2623	119	28	5093
	Row N %	45.6%	51.5%	2.3%	.6%	100.0%
Q20K Number: Plug-in electric vehicle	Weighted Count	4955	118	18	2	5093
	Row N %	97.3%	2.3%	.3%	.0%	100.0%

Q21 Have you participated in an energy efficiency program or received a rebate from your electric cooperative in the past two years?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	579	11.2	11.4	11.4
	No	4206	81.6	83.0	94.4
	Don't Know	283	5.5	5.6	100.0
	Total	5068	98.4	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	72	1.4		
	Total	83	1.6		
Total		5151	100.0		

Q22 Have you ever had a home energy audit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	617	12.0	12.2	12.2
	No	4124	80.1	81.5	93.7
	Don't Know	319	6.2	6.3	100.0
	Total	5059	98.2	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	81	1.6		
	Total	92	1.8		
Total		5151	100.0		

Q23A Percentage of household lighting from incandescent lights

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None (0%)	484	9.4	11.4	11.4
	1 to 25%	1517	29.5	35.8	47.3
	26 to 50%	932	18.1	22.0	69.3
	> 50%	1301	25.3	30.7	100.0
	Total	4234	82.2	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	906	17.6		
	Total	917	17.8		
Total		5151	100.0		

Q23B Percentage of household lighting from CFLs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None (0%)	755	14.7	20.2	20.2
	1 to 25%	1645	31.9	44.0	64.3
	26 to 50%	846	16.4	22.7	86.9
	> 50%	488	9.5	13.1	100.0
	Total	3734	72.5	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	1406	27.3		
	Total	1417	27.5		
Total		5151	100.0		

Q23C Percentage of household lighting from LEDs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None (0%)	644	12.5	16.0	16.0
	1 to 25%	1261	24.5	31.4	47.4
	26 to 50%	877	17.0	21.8	69.2
	> 50%	1237	24.0	30.8	100.0
	Total	4019	78.0	100.0	
Missing	N/A - Non-Home Account	11	.2		
	No Response	1121	21.8		
	Total	1132	22.0		
Total		5151	100.0		

\$Q24 Frequencies

		Responses		Percent of Cases
		N	Percent	
\$Q24 ENERGY	Q24A Energy Star refrigerator	2819	39.7%	54.9%
EFFICIENT ITEMS	Q24B Programmable thermostat	2445	34.4%	47.6%
USED IN HOME ^a	Q24C 'Smart' thermostat	472	6.6%	9.2%
	Q24X None/No Response	1372	19.3%	26.7%
Total		7108	100.0%	138.3%

\$Q25 Frequencies

		Responses		Percent of Cases
		N	Percent	
\$Q25 UPGRADES MADE TO HOME IN LAST FIVE YEARS ^a	Q25A Added insulation (wall, ceiling, attic, etc.)	732	12.7%	14.2%
	Q25B Replaced windows or doors	1100	19.1%	21.4%
	Q25C Added duct insulation or duct sealing	347	6.0%	6.8%
	Q25X None/No Response	3564	62.1%	69.3%
Total		5744	100.0%	111.7%

\$Q26 Frequencies

		Responses		Percent of Cases
		N	Percent	
\$Q26 POSSIBLE LOCATION FOR SOLAR PANELS ^a	Q26A On the rooftop of my home	3314	39.5%	64.3%
	Q26B On the roof of my garage, barn, or outbuilding	2155	25.7%	41.8%
	Q26C Elsewhere on my property, not a rooftop	1741	20.8%	33.8%
	Q26D Not possible to install solar panels at this location	516	6.2%	10.0%
	Q26X None/No Response	659	7.9%	12.8%
Total		8384	100.0%	162.8%

Q27 How likely would you be to install solar panels to meet your home's electricity needs if your out-of-pocket costs were:

	1 - Very Unlikely	2	3	4	5 - Very Likely	Total
	Row N %	Row N %	Row N %	Row N %	Row N %	Mean
Q27A Likelihood to install solar panels: \$10,000	54.7%	7.4%	14.9%	8.3%	14.7%	2.2
Q27B Likelihood to install solar panels: \$15,000	68.4%	8.8%	11.1%	6.5%	5.2%	1.7
Q27C Likelihood to install solar panels: \$20,000	80.7%	8.8%	5.6%	1.4%	3.4%	1.4
Q27D Likelihood to install solar panels: \$25,000	88.9%	5.0%	1.8%	.9%	3.3%	1.2

Q28 If you were to consider installing solar panels at your home, how important would these benefits be in your decision?

	1 - Not at All Important	2	3	4	Very Important	Total
	Row N %	Row N %	Row N %	Row N %	Row N %	Mean
Q28A Reducing my electric bill	12.6%	3.6%	13.3%	14.9%	55.6%	4.0
Q28B Improving the environment	17.2%	7.7%	17.4%	17.2%	40.5%	3.6
Q28C Using rebates or tax credits	15.7%	6.9%	18.7%	19.6%	39.1%	3.6
Q28D Generating my own energy	16.5%	6.1%	17.3%	19.0%	41.1%	3.6

Q29 Age of the person completing this questionnaire:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under Age 35	101	2.0	2.0	2.0
	35-44 Years	277	5.4	5.5	7.5
	45-54 Years	453	8.8	9.0	16.5
	55-64 Years	1179	22.9	23.4	39.8
	65+ Years	3037	59.0	60.2	100.0
	Total	5047	98.0	100.0	
Missing	No Response	104	2.0		
Total		5151	100.0		

Q30 Including yourself, how many persons are there in your household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	One	1033	20.1	20.6	20.6
	Two	2986	58.0	59.4	80.0
	Three	454	8.8	9.0	89.0
	Four	267	5.2	5.3	94.3
	Five	153	3.0	3.0	97.4
	Six or More	131	2.5	2.6	100.0
	Total	5025	97.5	100.0	
Missing	No Response	126	2.5		
Total		5151	100.0		

Q31 Number of years you have received electric service from your electric cooperative:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than 5 Years	807	15.7	15.8	15.8
	5-9 Years	562	10.9	11.0	26.9
	10-19 Years	1245	24.2	24.4	51.3
	20-39 Years	1628	31.6	32.0	83.3
	40 or More Years	851	16.5	16.7	100.0
	Total	5094	98.9	100.0	
Missing	No Response	57	1.1		
Total		5151	100.0		

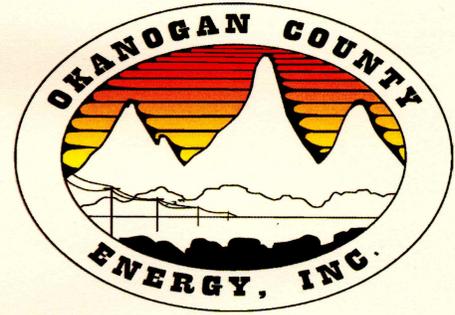
Q32 Category that best describes your 2018 household income:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less Than \$25,000	682	13.2	15.7	15.7
	\$25,000-\$49,999	1099	21.3	25.4	41.1
	\$50,000-\$74,999	862	16.7	19.9	61.0
	\$75,000-\$99,999	620	12.0	14.3	75.3
	\$100,000-\$149,999	612	11.9	14.1	89.4
	\$150,000-\$199,999	206	4.0	4.8	94.2
	\$200,000 or More	252	4.9	5.8	100.0
	Total	4333	84.1	100.0	
Missing	Don't Know/Refused	617	12.0		
	No Response	201	3.9		
	Total	818	15.9		
Total		5151	100.0		

This section contains statements about energy use in your home. Please rate each of the following statements using a scale from "1" to "5," where "1" means "Strongly Disagree" and "5" means "Strongly Agree."

	1 - Strongly Disagree	2	3	4	5 - Strongly Agree	Total
	Row N %	Row N %	Row N %	Row N %	Row N %	Mean
Q33 It is very important for me to find ways to control my energy costs.	1.7%	2.6%	21.4%	27.7%	46.6%	4.1
Q34 I would actively shift electric use to overnight and weekends if it saved me money.	12.1%	13.9%	25.4%	21.4%	27.1%	3.4
Q35 I would accept my electric water heater being shut off for short periods if it meant lower costs and minimal disruption.	22.9%	16.6%	24.4%	17.7%	18.4%	2.9
Q36 I would like to (or already do) use my computer or smart phone to track 'real-time' (current) electricity use in my home.	37.6%	18.1%	22.8%	10.5%	11.0%	2.4
Q37 It is beneficial for my electric cooperative to offer rebates to encourage energy efficiency.	3.3%	3.5%	18.9%	24.4%	49.9%	4.1
Q38 I would be interested in an option to pre-pay my electric bills.	38.2%	18.6%	27.7%	7.9%	7.5%	2.3
Q39 I am willing to pay \$5 more per month for power from non-hydro renewable energy sources like wind, solar, or biomass.	32.7%	13.2%	20.5%	14.9%	18.7%	2.7
Q40 I would consider buying a plug-in electric or hybrid car or truck if the incremental price was \$3,000 or less.	46.7%	15.0%	16.3%	9.6%	12.4%	2.3
Q41 I am considering installing solar panels on my home or elsewhere at my property within the next two years.	59.0%	16.1%	14.2%	5.1%	5.6%	1.8
Q42 I would be likely to participate in a program that allowed me to own solar panels, but off my property and I didn't have to maintain them.	38.3%	15.4%	24.0%	11.5%	10.7%	2.4
Q43 I usually read the member newsletters provided by my electric cooperative.	7.7%	7.8%	21.1%	23.5%	39.8%	3.8
Q44 My electric cooperative does a good job of keeping me informed of energy-related topics and issues.	2.1%	2.8%	17.5%	30.6%	47.1%	4.2

To: Curtis Edwards: OCEC Board President
From: Dale Sekijima: OCEI Board President
Cc: David Gottula: General Manager, Lynn Northcott CFO
Date: January 28, 2019
Re: the OCEI - OCEC relationship



Curtis,

Some questions about OCEI governance were raised recently which are best addressed by understanding the OCEC – OCEI relationship. With staff's assistance and discussion with legal Counsel, I've put together an overview of the organizational structure and business practices connecting OCEC and OCEI.

Although some of this material is pretty dry, I think it will be informative for new(er) board members. I recommend you share this memo with OCEC directors and have a Q/A discussion at the February OCEC Board meeting.

Organizational Structure

OCEC is a 501(C)(12) electrical cooperative, providing electrical services to its member owners at the lowest cost consistent with good business practices. OCEC qualifies for an IRS federal tax exemption because of its 501(C)(12) status.

OCEI is a regular corporation (i.e., C corporation) formed in 2002 based on interest in the Methow valley for a lower priced source for propane. OCEI can provide propane fuel and related services to any potential customer. OCEC established OCEI and immediately spun it off as a subsidiary which is operationally and legally independent from OCEC.

The importance of OCEC's federal tax exemption is the primary factor driving the relationship in which OCEC is the parent with OCEI as a subsidiary. Qualification for and maintenance of OCEC's federal tax exemption under I.R.C. 501(c)(12) requires that OCEC satisfy tests in three areas: (1) cooperative organization and operation; (2) activities; and (3) income source.

1. Organization and operation: The basic requirements are democratic control (member ownership), operating at cost (return excess margin to members) and subordination of capital (monetary benefits do not flow to non-members).

OCEC operates on cooperative principles, delivering electric service only to member owners. OCEI, conversely, sells propane fuel and services to a customer base maintained separately from OCEC's member base. OCEI customers may also be OCEC members but OCEC membership is not required.

OCEI's independent subsidiary status allows sales beyond the OCEC member base and avoids the difficulty of equitable allocation of costs if the electric business and the propane business operated as one unit with comingled operational expenses and customer base.

Operating OCEI with a separate board including a majority of outside directors reinforces OCEI's separation by ensuring that OCEC does not have excessive management control of the OCEI board.

2. Activities: 501(C)(12) cooperatives are limited to involvement with 'like business activities'.

OCEC is an electrical cooperative limited to providing electricity to members. At OCEI's formation in 2002 the IRS had not ruled on the question of propane gas distribution as a 'like providing electrical service activity'. Operating OCEI as a 'for profit', independently operated subsidiary as opposed to either 1) a second 501(C)(12) cooperative or 2) operationally and financially folded into OCEC offset the uncertainty of an IRS ruling on propane distribution as a 'like business activity'.

3. Income source: OCEC must receive at least 85% of its income each year from its members to maintain federal tax-exempt status. The 85% must be collected solely to meet cooperative expenses.

Using at 2018 as an example: OCEC Patronage capital or margins (pre-audit with Cost of Power added back) was ~ \$3,377K. OCEI represented roughly 3% of that figure -- \$18K in rent, \$15K in interest income from a loan extended from OCEC to OCEI, and an estimated \$58K in staff support.

Business Practices affecting Tax Exemption Status

OCEI: The Subsidiary

- As of this memo's date, there are no disputes regarding OCEC as the sole owner of OCEI. There are no allegations of OCEI wrongful acts or operational mismanagement.
- OCEI, by Board resolution, has a three-person board. The number of outside directors (i.e., are not OCEC directors) exceeds the number of inside directors, reducing the risk the IRS may consider OCEI as a non-independent subsidiary. The OCEC Treasurer is often invited to OCEI board meetings for financial discussion. This has several benefits: 1) Our lender, CFC, requires that all long-term debt from CFC be held by the parent, OCEC. Any additional OCEI long term debt is in OCEC's name and thus needs to be approved by the OCEC board. The total debt is allocated between OCEC and OCEI internally. OCEC Treasurer's understanding of OCEI CapEx plans expedites OCEC discussion. 2) The Treasurer may have comments on OCEC as an alternative to outside lenders. 3) The Treasurer may have comment on OCEI dividend priority. 4) The Treasurer has sufficient knowledge to act as a short term interim replacement in case of an incapacitated OCEI director.
- The following are maintained and held at OCEI's office:
 - Articles of Incorporation
 - Bylaws -- Washington State corporation regulations for regular corporations do not require signed or publicly filed bylaws; only kept in conjunction with the corporate minute book. That said, OCEI does retain signed bylaws.
 - Resolutions and policies.
 - Financials for the past three years in the form of a combined OCEC/OCEI financial statement.
 - Minutes of annual OCEI shareholder (OCEC board) meetings for the past three years
 - Written communications with the OCEC board for the past three years
 - A list of names and business addresses of current directors and officers
- OCEI board meetings are not open to the public.

- Quarterly review of summary financials by the OCEC board. No copies of financials are distributed.
- Responsibility for bylaws revision with revisions being approved by the OCEC board.
- A service contract with OCEC defines rent and staff support costs.
- Annual audit of finances.
- Consideration of a dividend based on a combination of retained earnings, available cash and CapEx plan.

OCEC: The Parent

- OCEC is the sole owner of OCEI. Shareholder rights are exercised exclusively by majority vote on a motion or resolution by the OCEC Board. These rights include:
 - The Right to Share in Profitability: At a time when OCEI has excess earnings the OCEI Board may decide to pay a dividend to OCEC. The timing and amount of any dividend will take into consideration the 85/15 test for maintaining OCEC's federal tax exemption status.
 - The Right to Influence Management: An annual OCEI shareholder meeting is held for the purpose of electing OCEI directors. A director's term is 1 year.
 - The opportunity to inspect corporate books and records: The information listed above under OCEI business practices is available for review. However, OCEI policy establishes rules and procedures for corporate information access. OCEI has competitors located both in the Methow valley and the Okanogan valley. Financial and operational data including but not limited to wholesale prices, margins, and volume are highly sensitive and are not released without OCEI board approval.

Shareholder rights do not include attendance at OCEI board meetings, revision of OCEI bylaws/policies, or undue influence on OCEI business operations.
- Interest and rent payments from OCEI appear on CFC Form 7 as non-operating margin interest/other.
- Approval of increases in OCEI long term debt. CFC, OCEC's primary lender, includes OCEI's debt service in assessing OCEC's financial health.
- Quarterly review of OCEI summary financials
- Management of the annual OCEC and subsidiary consolidated audit

Additional Takeaways From Legal Counsel Discussion

- Bylaws: Counsel reviewed OCEI bylaws. Described them as generic; providing the directors, and officers protection and management structure. At this time, Counsel sees no need or priority for bylaw revision.
- Outside directors: Counsel strongly recommends the number of outside directors exceed that of OCEC directors on the OCEI board. As noted above, maintaining OCEC's 501(C)(12) status depends on OCEI's separate and independent operation. A majority of outside directors on the OCEI board reduces the argument of 'too much influence' by the OCEC parent. If the IRS prevailed with an undue influence argument, OCEI financials could be collapsed into OCEC, jeopardizing OCEC's tax exempt status.
- OCEI Shares and Certificates: OCEI is authorized to issue shares of common stock, with or without certificates. OCEI has operated as an OCEC subsidiary for 15 years, but to date has not issued shares. At this time, Counsel does not see share issuance as needed to validate OCEC ownership of OCEI. It is not a priority given the history of operational practice and absent disputes over OCEC ownership.
- Board officers: Counsel does not view a circumstance in which an OCEC director serves as an officer of both the OCEC and the OCEI boards as an inappropriate concentration of authority or a conflict of interest. The same holds true for an OCEI director holding multiple OCEI officer positions.
- Operational separation: Counsel pointed out that OCEI's independent operation minimizes liability associated with the OCEI business from bleeding over into OCEC.