

WEXENERGY PROJECT TAKEAWAYS

INCUBATENERGY DEMO DAY
OCTOBER 19TH – 20TH, 2021

Doug Lindsey, EPRI
James Linder, TVA
Rachel Rosen, WexEnergy



WHAT IS A *WINDOWSKIN*®?

***WINDOWSKIN*® IS A
TRANSPARENT WINDOW
INSULATION PANEL THAT
SNAPS-ON TO THE INSIDE
WINDOWPANE.**

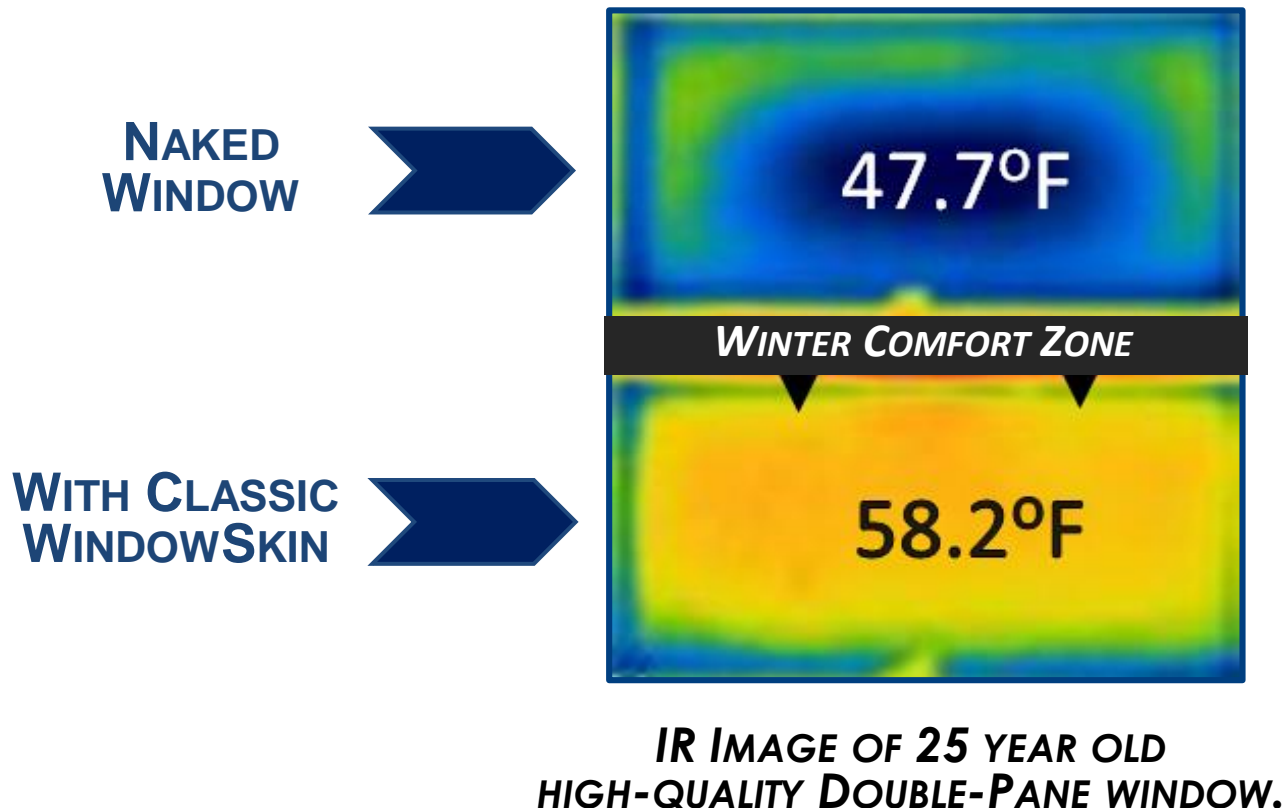
**WINDOWSKIN FITS ALL
RECTANGULAR WINDOWS.**



CUSTOMER SITE, ITHACA, NY
PHOTO CREDIT: WEXENERGY, 10/5/2021

IMPACT OF WINDOWSKIN®

WINDOWSKIN REDUCES ENERGY USAGE AND COSTS AND IMPROVES COMFORT BY KEEPING HEAT INSIDE IN THE WINTER AND OUTSIDE IN THE SUMMER.



BUILDING OCCUPANTS ARE COMFORTABLE WHEN THE SURFACE TEMPERATURE OF WINDOW GLAZING IS ABOVE 54°F¹

OUTDOOR TEMP:	17° F
INDOOR T-STAT SETTING:	68°F
INDOOR TEMP:	65°F
WINDOW TO WALL RATIO:	>50%

1. CENTER FOR THE BUILT ENVIRONMENT,
UC BERKELEY (2006)

CUSTOMERS SAY:

“...PRIOR TO (WINDOWSKIN) INSTALL, ONE COULD STAND 3 TO 4 FEET FROM THE (DOUBLE-PANE) WINDOWS AND FEEL THE ICE-COLD AIR, DURING THE WINTER MONTHS, EMANATING OUT.

... AFTER INSTALL, THAT RANGE BECAME ABOUT A FOOT OR LESS.”

*– Executive Dir. of Housing Authority
Canton, NY*

WINDOWSKIN®: HIGH PERFORMING WINDOW ENERGY RETROFIT



**AFFORDABLE & COST EFFECTIVE
EASY INSTALL!**



TRANSPARENT & FEATHERWEIGHT



**WINDOWS & WINDOW TREATMENTS
OPEN AND CLOSE**



**DURABLE & LONG LASTING
100% MADE IN THE USA
GREENGUARD® & CRADLE-TO-CRADLE™
CERTIFIED MATERIALS**

WINDOWSKIN[®] PROJECT DEPLOYMENT



**WINDOWSKINS WILL BE
INSTALLED IN AT LEAST 10
HOMES OF INCOME ELIGIBLE
HOMEOWNERS IN
NASHVILLE, TN.**

**PHOTO COURTESY OF
ED LOUIE, PNNL AUGUST, 2021**

PROJECT STATUS

WEXENERGY IS IN THE MANUFACTURING PHASE OF THIS PROJECT. WINDOWSKIN INSTALLATION WILL BEGIN VERY SOON.

**PRE-SCREENING
OF HOMES**

**VIRTUAL TRAINING:
MEASURING WINDOWS
FOR WINDOWSKIN®**

**SITE
MEASUREMENTS**

MANUFACTURING

INSTALLATION

REPORTING

*PLEASE REFER TO **SLIDES 14 – 22** TO GAIN A DEEPER UNDERSTANDING OF THIS PROJECT, TO DATE, AND EACH PHASE OF THE PROCESS.*

1.

KEY TAKEAWAYS

**TVA REPORTED:
WINDOWSKINS[®] ARE AN
“EASY SELL”
TO THEIR CUSTOMERS**

BECAUSE
**WINDOWS OPEN & CLOSE,
JUST AS THEY ALWAYS HAVE!**

2.

KEY TAKEAWAYS

TVA & CLEAResult REPORTED:

**WINDOWSKINS® ARE ATTRACTIVE FOR
UTILITY PROGRAM IMPLEMENTERS & TRADE ALLIES BECAUSE:**

- ✓ **WINDOWSKINS CAN BE FITTED TO MOST WINDOWS**
- ✓ **WINDOWSKINS ARE EASY TO INSTALL**
- ✓ **REPLACEMENT WINDOWS ARE TOO EXPENSIVE
FOR THEIR BUDGETS**

3.

KEY TAKEAWAYS

***WINDOWSKINS*[®] ARE A**
UNIVERSAL SOLUTION FOR A UNIVERSAL PROBLEM

BECAUSE THEY

FIT 95+% OF WINDOWS
IN THIS INCUBATENERGY PROJECT

KEY LESSONS LEARNED

- ✓ **WEXENERGY IMPROVED ITS VIRTUAL TRAINING WEBINAR AND MATERIALS BASED ON USER FEEDBACK.**
- ✓ **WEXENERGY IS DEVELOPING A PLATFORM TO FURTHER SIMPLIFY AND ACCELERATE WINDOW MEASUREMENT PHASE**
- ✓ **IMPROVING THE MEASUREMENT PROCESS THROUGH AN APPLICATION/PLATFORM WILL REDUCE TIME SPENT ON-SITE & INCREASED PRODUCTIVITY.**

OUR TEAM

UTILITY REPRESENTATIVES:

JAMES LINDER, INNOVATION SCOUTING, TVA ADVISOR
FRANK RAPLEY, TVA HOME UPLIFT MANAGER

jlinder@tva.gov
fmrapley@tva.gov

STARTUP REPRESENTATIVES:

RACHEL ROSEN, CEO & CO-FOUNDER, PROJECT LEAD
RON WEXLER, CTO & CO-FOUNDER, PROJECT LEAD

rachelrosen@wexenergy.com
ronwexler@wexenergy.com

EPRI REPRESENTATIVE:

DOUG LINDSEY, TECHNICAL LEADER, EPRI SME

dlindsey@epri.com

Please contact a team member to get more information about this project.

THANK YOU



**PLEASE REFER TO APPENDIX SLIDES 14 – 22
FOR A DEEPER DIVE INTO THE
WEXENERGY – TVA DEMONSTRATION PROJECT**



STAGES OF THE WEXENERGY – TVA DEMONSTRATION PROJECT

1. PRE-SCREEN HOMES FOR *WINDOWSKIN*® RETROFIT
2. WEXENERGY PROVIDED A VIRTUAL TRAINING WEBINAR TO CLEAResult
3. SITE VISITS TO MEASURE WINDOWS TO QUALIFY HOMES FOR WINDOWSKIN RETROFIT
 - ✓ CLEAResult SITE VISITS & DATA UPLOAD TO WEXENERGY
 - ✓ WEXENERGY REVIEW OF MEASUREMENT DATA
 - ✓ FINAL QUALIFICATION OF HOMES BASED ON PREDETERMINED VALUES
4. MANUFACTURING & DELIVERY OF WINDOWSKINS INSTALLATION OF WINDOWSKINS
5. COLLECTION OF ENERGY CONSUMPTION DATA (12 MONTHS) AND TELEPHONE INTERVIEWS WITH HOMEOWNERS
6. REPORT RESULTS

1.

PRE-SCREENING

TVA PROVIDED EPRI WITH INFORMATION ON HOMES PREVIOUSLY IMPROVED THROUGH THEIR HOMEUPLIFT PROGRAM.

EPRI PARED THE LIST OF TO SITES THAT COULD FIT WITHIN PROJECT REQUIREMENTS.

WEXENERGY PROVIDED ADDITIONAL INPUT BASED ON PRELIMINARY INFO PROVIDED.

city	state	zip	sqfoot	yearbu	numberofwindow	Sq. Ft./windo	windowtype	Wex Ranking	Initial Screening
Nashville	TN	37208	999	1961	5	200	Single w/ Storm	B	Interested
Nashville	TN	37218	1224	1979	6	204	Single w/ Storm	C	Maybe Interested
Nashville	TN	37216	884	1940	7	126	Single w/ Storm	B	Interested
Antioch	TN	37013	1229	1949	8	154	Single w/ Storm	A	Interested
Old Hickory	TN	37138	875	1957	8	109	Single w/ Storm	A	Interested
Nashville	TN	37207	900	1962	8	113	Single	B	Interested
Nashville	TN	37208	1312	1930	8	164	Single	C	Interested
Nashville	TN	37218	986	1968	8	123	Single w/ Storm	C	Interested
Nashville	TN	37207	1152	1988	9	128	Single w/ Storm	A	Interested
Nashville	TN	37218	1118	1970	9	124	Single w/ Storm	B	Interested
Nashville	TN	37206	882	1990	9	98	Single w/ Storm	B	Interested
Madison	TN	37115	1980	1956	9	220	Single w/ Storm	B	Interested
Nashville	TN	37206	1080	1952	9	120	Single w/ Storm	C	Interested
Nashville	TN	37207	1050	1971	9	117	Single w/ Storm	C	Interested
Nashville	TN	37218	850	1970	10	85	Single w/ Storm	A	Interested
Nashville	TN	37207	1175	1966	10	118	Single w/ Storm	A	Interested
Nashville	TN	37211	1250	1957	10	125	Single w/ Storm	A	Interested
Nashville	TN	37207	1152	1999	10	115	Single w/ Storm	B	Interested
Nashville	TN	37207	1161	1971	10	116	Single w/ Storm	B	Interested
Nashville	TN	37218	1025	1972	10	103	Single w/ Storm	C	Interested
Nashville	TN	37218	1012	1967	10	101	Single w/ Storm	C	Interested
Nashville	TN	37218	850	1972	10	85	Single w/ Storm	C	Interested
Nashville	TN	37211	950	1957	10	95	Single w/ Storm	C	Interested
Nashville	TN	37204	1120	1941	10	112	Single w/ Storm	D	Interested
Nashville	TN	37209	775	1964	10	78	Single w/ Storm	D	Interested
Nashville	TN	37209	1400	1994	10	140	Single w/ Storm	C	Maybe Interested
Nashville	TN	37207	1181	1972	11	107	Single w/ Storm	A	Interested
Nashville	TN	37207	1125	1963	11	102	Single w/ Storm	A	Interested
Nashville	TN	37218	1050	1970	11	95	Single w/ Storm	A	Interested
Nashville	TN	37211	950	1957	11	86	Single w/ Storm	A	Interested
Nashville	TN	37207	2182	1967	11	198	Single	B	Interested

2a.

VIRTUAL WEBINAR MEASUREMENT TRAINING

**WEXENERGY
SHIPPED MEASUREMENTS
TOOLS TO CLEAResult AND
PROVIDED VIRTUAL TRAINING
ON HOW TO CATALOG AND
MEASURE WINDOWS FOR
WINDOWSKIN® INSTALLATION.**



2b.

QUALIFIED WINDOWS



EGRESS WINDOW



FIXED WINDOW



FRENCH DOOR WINDOW



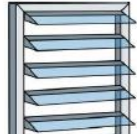
GARDEN WINDOW



HOPPER WINDOW



GLASS BLOCK



JALOUSIE WINDOW



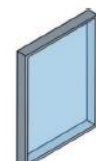
LUNETTE WINDOW



ORIEL WINDOW



PALLADIAN WINDOW



PICTURE WINDOW



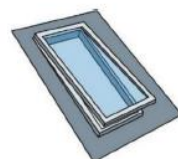
RADIUS WINDOW



ROUND WINDOW



SINGLE-HUNG WINDOW



SKYLIGHT WINDOW



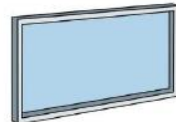
STORM WINDOW



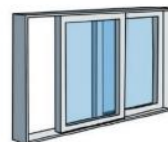
THREE-PANEL SLIDER WINDOW



TILT-AND-TURN WINDOW



TRANSOM WINDOW



TWO PANEL WINDOW

2c.

HANDS ON MEASUREMENT TRAINING



WindowSkin Measurement Training w. CLEAResult & TVA 07072021

3.

SITE VISITS

- ✓ **CLEAResult SITE VISITS & DATA UPLOAD TO WEXENERGY**
- ✓ **WEXENERGY REVIEWS MEASUREMENT DATA**
- ✓ **FINAL QUALIFICATION OF HOMES BASED ON PREDETERMINED PARAMETERS**

4.

WINDOWSKIN MANUFACTURING

- ✓ **WINDOWSKINS ARE CUSTOM MANUFACTURED TO OPTIMIZE FIT FOR EACH WINDOW**
- ✓ **UTILITIES CAN EXPECT DELIVERY OF WINDOWSKIN 6 – 10 WEEKS FOLLOWING ORDER CONFIRMATION**

5.

DATA COLLECTION

- ✓ **TVA WILL MONITOR ENERGY CONSUMPTION OF HOMES RETROFITTED WITH WINDOWSKINS FOR A 12 MONTH PERIOD.**
- ✓ **TELEPHONE INTERVIEWS WILL BE CONDUCTED TO GAIN HOME OWNER'S PERSPECTIVE ON THEIR WINDOWSKIN® INSTALLATION**

6.

REPORT



**TVA WILL CONSOLIDATE THE INFORMATION
GATHERED AND PRESENT IT IN REPORT FORM
IN Q1/Q2 – 2023**