

# High-Performance Homes in Any Market

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ASSOCIATION OF  
REALTORS®



# Melisa Camp, M.Ed.

REALTOR®, GREEN, ABR, PMN, PSA, e-Pro,  
C2EX & Fairhaven grad, Instructor,  
& LEED AP-Homes

Phoenix, AZ





# Christopher Matos-Rogers

REALTOR®, GREEN, AHWD

Atlanta, GA

# Defining Performance





## Energy

- Energy Efficiency
- Electrification
- Renewable Energy



## Energy Efficiency: How & Why

- Homeowners perform energy efficiency upgrades to lower energy costs, increase indoor comfort, improve indoor air quality, for energy independence & resilience, and for the planet.
- Insulate & air seal!
- Third party testing and verification: blower door test, HERS score, verification and documentation during construction. For retrofits, testing before and after to verify improvements and proper installation.

# Energy Efficiency Labels

## 1. Whole Home Certification



## 1. Appliance & Electronics





## Building Certifications

[Hide details](#) ^

## Platinum

Verification Type	EarthCraft
Verifying Entity	Southface Institute
Verification Date	2021-03-12
Verification Rating	Platinum
Data Source	Southface Institute
Data Status	Completed
Version No.	EarthCraft Single Family Renovation Project
Year Verified	2021



## Appraisal Addendum

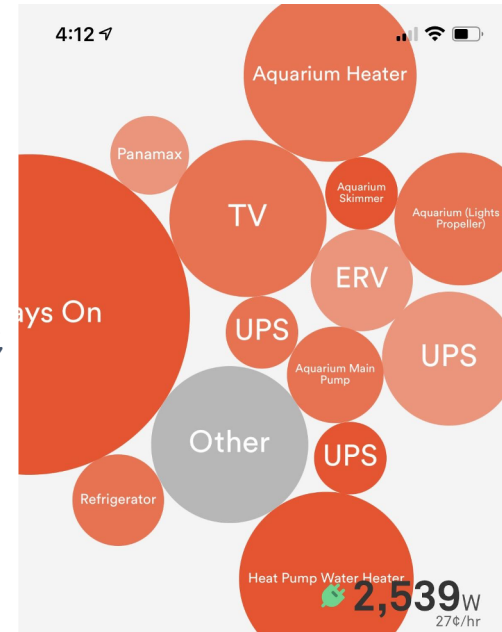
[DOWNLOAD ADDENDUM](#)

\*NOTICE: This Residential Green and Energy Efficient Addendum lists relevant, public data from the GBR. It is generated with the permission of the Appraisal Institute®. Click the link above to download the form. This form may be provided to an appraiser, and the appraiser may deem use of this form appropriate in developing an opinion of the value of

# Energy Saving Mindset

Ways you can begin saving energy effortlessly

1. **Swap lighting to LED.** *Modern LED lighting is diverse, long lasting, and inexpensive*
2. **Grab a tube of caulk** *Air sealing around doors, windows, ducts, and other penetrations is easy and an instant savings*
3. **Automate!** *Use smart home devices to schedule lighting & HVAC usage by time or occupancy*
4. **Time of Use?** *Run heavy electrical loads at off-peak times: clothes dryer, car charging, appliances, etc*
5. **Electrify everything.** *From EVs, to heat pumps, to induction cooking, these electric technologies are more efficient without sacrificing performance.*



# Electrification Benefits

2-5x

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Electrification technologies such as heat pumps and EVs are up to 5x efficient as their fossil gas counterparts

39%

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Today's buildings create roughly 39% of CO2 emissions

\$7,500-\$8,200

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An all-electric, single-family home is \$7,500-\$8,200 cheaper to build than a comparable home

Sources: EPA, USGBC, New Buildings Institute



# Opportunities to Electrify



## Space Heating

Heat pumps move heat from one place to another, allowing them to reduce energy usage by at least 50% over resistive heat options.



## Cooking

Electric cooking options such as induction perform faster with more precise control than gas, are more efficient, and reduce emissions and excess heat in the kitchen.



## Water Heating

Water heating options such as heat pump water heaters reduce not only overall usage, but at a much lower peak energy demand.



## Vehicles

Electric vehicles are increasingly available in diverse segments, providing fuel savings and lower maintenance costs compared to similar gas powered vehicles.

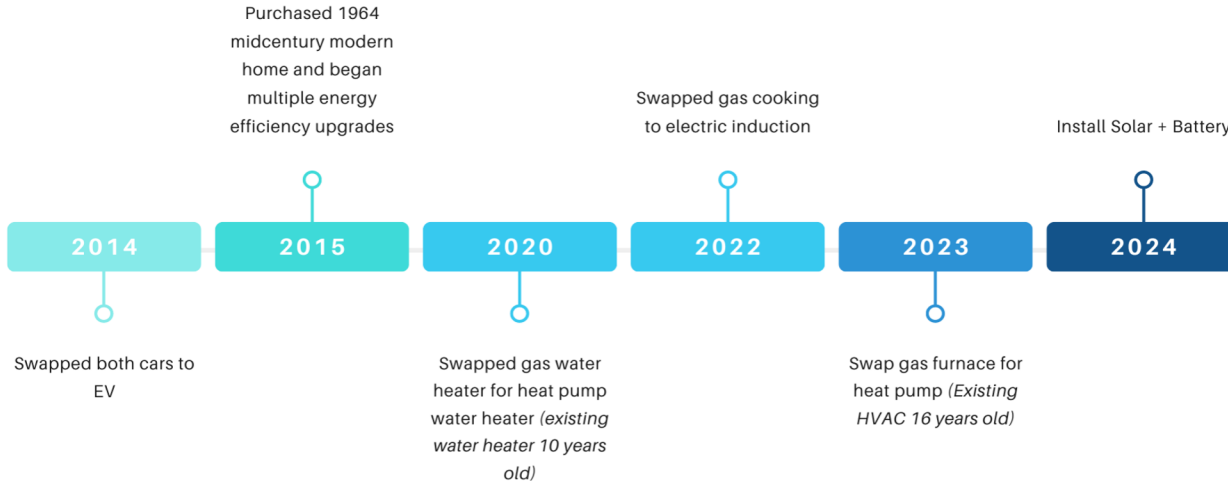


## Renewable Energy

- Solar, wind, and geothermal can be found in residential use
- Know the benefits to help sellers attain value at time of sale, and use the Appraisal Green Addendum
- Tools include [PV Value](#) and NAR Partner [Pearl Certification](#)

## DECARBONIZATION TIMELINE

One Family's 10 year roadmap





## Water

- Water Shortages
- Water Efficiency
- Water Quality



“The problem with this water crisis is that the water that’s drinkable is disappearing and the water that’s not drinkable is gonna start appearing everywhere.”

**Jaden Smith**, Musician, Rapper and Activist,  
from Netflix film *Brave Blue World*

# Water Use

13.6%

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In the U.S., buildings account for 13.6% of potable (drinkable) water use.

300 gal

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The average American family uses over 300 gallons of water per day.

70%

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Approximately 70% of total household water use is happening indoors.

Sources: EPA, USGBC



# Water Conservation for Every Market



## Reduce Indoor & Outdoor Use

Establish a baseline, testing, products, flow rates



## Remodel & Building Opportunities

Water efficient home improvements for every budget



## Drinking water

Researching & testing your water supply, does your market have known concerns



## Change how you operate

Take the quiz, find often no cost, quick fixes, & live mindfully of water at home & work



Green building science



Mindset & good habits (not letting sink run)



# Green Building Science



1

## Establish baseline use

Baseline use will depend on number of occupants and performance of home

2

## Test & act

DIY or professional testing, fix all leaks, make water saving improvements

3

## Re-test & monitor progress

Re-test to measure savings, pay attention, use tech to help monitor

# Labels and Certifications

HERS<sub>H2O</sub> builds off RESNET's nationally recognized Home Energy Rating System (HERS®) Index, which is the gold standard for rating the energy efficiency of a home. HERS<sub>H2O</sub> is a system for **rating whole-house water efficiency** that includes both indoor and outdoor uses. With the average family spending more than \$1,000 annually on water costs, HERS<sub>H2O</sub> provides a simple, easy to compare rating on a scale from 0-100+; where lower numbers mean less water use.

Builders that are already having their homes HERS Rated, can easily add a HERS<sub>H2O</sub> Rating.



**WaterSense** labeled homes must be at least 30% more water-efficient than typical new construction Requires 3rd party verification



# Indoor Water Solutions

- WaterSense labeled products

20% more water efficient than average products

- Easy to find
- Identify rebates

**ENERGY STAR** washer  
25% less energy, 33% less water



category below to get started.

- [WaterSense Home](#)
- [Rebate Finder](#)

Download a full list of WaterSense labeled product models that includes efficiency information



- <https://lookforwatersense.epa.gov/products/>

# Indoor Water Solutions

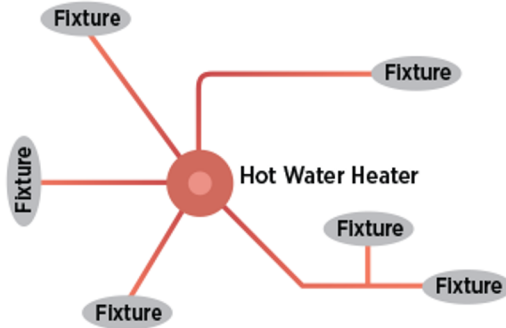
- Check your flow rate specs

- Kitchen faucet 2.2 gpm
- Bath faucet 1.5 gpm
- Showerhead 1.75 gpm
- Toilet 1.1 gpf
- Washers IWF less than 4.3-3.2 depending on capacity

- Read water meter, wait 15 min+ when no one using water, read again to see if leaking
- Ideally water pressure less than 60 psi
- Add faucet aerators to aid in pressure
- Water bag or rock in back of older toilets

## CORE

Pipes run directly from water heater to individual fixtures



## Building Opportunities

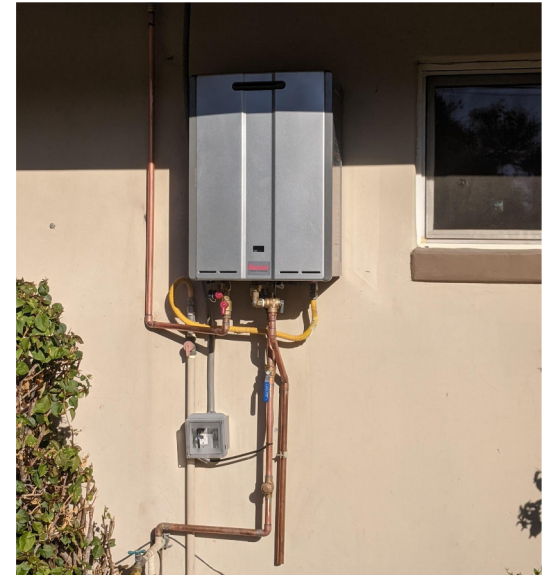
- Design central plumbing core for water heating
  - Less waiting, more efficient
  - Less piping length, diameter, labor
- Gray water recycling
  - Separate drain for lavatories, showers, bathtubs, & washing machines placed within 3 ft of foundation
  - Store & treat water for irrigation, toilets, car washing
  - Take # of occupants x 40 gal to estimate daily savings, or 15 gal for just washer
  - Can retrofit older homes

<https://basc.pnnl.gov/resource-guides>



# Water Heating Savings

- ENERGY STAR certified
- On demand water heating
- Recirculation pumps
- Timers
- Insulated 'jackets' and tubing



# Water Saving Mindset Inside



Save water today just by changing your personal habits - set goals

1. Take shorter showers, set timer or get out after a song or two, bring a bucket and a buddy
2. Don't let water run when brushing teeth and washing dishes
3. Only run full loads of dishes and clothes
4. Dump abandoned water glasses outside on plants instead of down the drain
5. If it is yellow let it mellow, if it is brown flush it down, flush only when need
6. Eat more whole foods and less meat

Take quiz online to see where you may be able to cut back @  
<https://www.watercalculator.org/>

# Outdoor Water Solutions

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## Fix leaks

Detect leaks by reading meter or water monitoring system



## Harvest Rainwater

Simple or elaborate system set ups, professional and DIY



## Group plantings

By water use needs



## Drip irrigation

Drip instead of sprinklers, use timers, sensors, and automation



## Xeriscape

Native, drought tolerant plants, consider artificial turf



## Get pool cover or remove

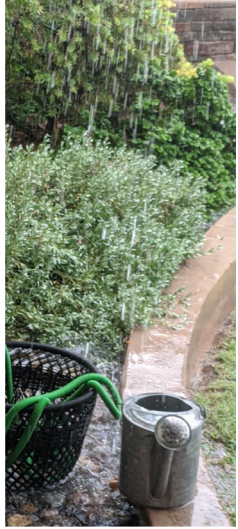
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## Permeable pavers



# Water Saving Mindset Outside



Save water today just by changing your personal habits

1. Only water landscaping early in morning or late in evening to prevent evaporation & don't overwater
2. Use a broom not a hose to clean hardscapes & windows
3. Harvest rainwater right off your roof with buckets
4. Hand water plants instead of using hose or sprinkler
5. Set lawn mower blades higher to limit evaporation
6. Limit or skip car washes, or use two water buckets and a sponge
7. Cover and uncover your pool/spa between use



Take quiz online to see where you may be able to cut back @  
<https://www.watercalculator.org/>

# Leverage the AI Green and EE Addendum

<b>Water Heater</b>	<input type="checkbox"/> ENERGY STAR®	Size: _____ gallons <input type="checkbox"/> Tankless	<input type="checkbox"/> Solar (next page) <input type="checkbox"/> Heat Pump <input type="checkbox"/> Coil
<b>HVAC &amp; Related Equipment</b> Describe in comments area.	<input type="checkbox"/> High Efficiency HVAC SEER: _____ Efficiency Rating: _____ % AFUE* _____ % *Annual Fuel-Utilization Efficiency	<input type="checkbox"/> Heat Pump Efficiency Rating: _____ COP: _____ HSPF: _____ SEER: _____ EER: _____	Thermostat/Controllers? <input type="checkbox"/> Yes <input type="checkbox"/> No Programmable Thermostat? <input type="checkbox"/> Yes <input type="checkbox"/> No Auxiliary heat source? <input type="checkbox"/> Yes <input type="checkbox"/> No Radiant Floor Heat? <input type="checkbox"/> Yes <input type="checkbox"/> No Geothermal? <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Vehicle Ready? (car charger) <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>Indoor Environmental Quality</b>	<input type="checkbox"/> Energy (ERV) or Heat Recovery Ventilator (HRV) <input type="checkbox"/> Other Measured Whole-House Ventilation Device (See glossary) <input type="checkbox"/> Humidity Monitoring Device installed		<input type="checkbox"/> Non Toxic Pest Control <input type="checkbox"/> Radon System: <input type="checkbox"/> Active <input type="checkbox"/> Passive
<b>Water Efficiency</b>	<input type="checkbox"/> Reclaimed Water System (Describe): _____ <input type="checkbox"/> Greywater reuse system <input type="checkbox"/> Water Saving Fixtures		<input type="checkbox"/> Rain Barrels Used in Irrigation Cistern size: _____ gallons Location of cistern: _____
<b>Utility Costs</b>	Annual Utility Cost: \$ _____ /year based on: _____ / _____ to _____ / _____ (full year)		

# Water Quality & Dissolved Metals

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## Copper

Copper less than 1.0 mg/L



## Mercury

Mercury less than 0.002 mg/L



## Lead

Lead less than 0.01 mg/L



## Arsenic

Arsenic less than 0.01 mg/L



## Antimony

Antimony less than 0.006 mg/L



## Nickel

Nickel less than 0.07 mg/L

Testing resources: [www.epa.gov/safewater/lab](http://www.epa.gov/safewater/lab)  
<https://v2.wellcertified.com/en/v/water/feature/2>

# Cleaner Drinking Water



Ultraviolet Light



Filtration



Reverse Osmosis



Distillation



Water Softener

[https://www.cdc.gov/healthywater/drinking/home-water-treatment/household\\_water\\_treatment.html](https://www.cdc.gov/healthywater/drinking/home-water-treatment/household_water_treatment.html)



## Air

- Indoor air quality science
- Healthier homes

Personal habits to keep the home highly-performing

# Indoor Air Quality

90%

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Americans are indoors approximately 90% of the time

2-5x

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Concentrations of some pollutants are often 2 to 5 times higher than typical outdoor concentrations

30%

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Poor indoor air quality can be found in about 30% of new and remodeled buildings

Sources: EPA, Consumer Product Safety Commission

# Ventilation



## Natural

Open operable windows and vents, easy, no cost, monitor outside air quality



## Filtration

HEPA filters, MERV 13 or higher, changed regularly



## Mechanical

Extract fan or supply fan assist, HVAC, sensors can automatically turn fan on



## Compartmentalization

Keep air in the garage (or other units in multi-family housing from escaping into the home)



# Remove Combustables



Induction cooking not gas



Electric fireplace

# Prevent off-gassing

Goal is odor neutral - the 'new home smell' is not good for health

Paint and stains with no VOC's (volatile organic compounds)

Formaldehyde free cabinetry

No VOC adhesives for carpets and countertops

Finishings and furniture can off-gas too like rugs, wallpaper, anything recently painted, curtains, etc.





## Monitoring and measuring key metrics

CO2  
VOC  
Particulates  
Humidity  
Temperature  
Radon  
Pressure

# Labels and Certifications

Look for  
these trusted  
labels for AQ  
& use green  
MLS fields



# AI Green and EE Addendum

THIRD-PARTY VERIFICATIONS (See types defined in glossary).				
The following verified items are considered within the appraisal analysis of the subject property:				
<b>Green Certification</b>  Certifications attest that the home meets certain minimum thresholds.	Environmental Protection Agency (EPA):		<input type="checkbox"/> Indoor airPLUS <input type="checkbox"/> WaterSense <input type="checkbox"/> ENERGY STAR	
	Energy Department (DOE):		<input type="checkbox"/> Zero Energy Ready Home (ZERH)	
	Home Innovation Research Labs NGBS Home Remodel:			
	Home Innovation Research Labs NGBS New Home:		<input type="checkbox"/> Bronze <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Emerald	
	Living Building Challenge (LBC):		<input type="checkbox"/> Living Building Certified <input type="checkbox"/> Petal Certification	
	Passivhaus Standard:		<input type="checkbox"/> PHI Low Energy <input type="checkbox"/> EnerPhit <input type="checkbox"/> Passive House	
Passive House Institute US:		<input type="checkbox"/> PHIUS+ 2015		
USGBC LEED:		<input type="checkbox"/> Certified <input type="checkbox"/> Silver <input type="checkbox"/> Gold <input type="checkbox"/> Platinum		
Other:				
Date Verified: ____/____/____	Green Certification Version: ____ Organization URL: _____		<b>ABOVE VALID ONLY IF CHECKED:</b> <input type="checkbox"/> Verification reviewed on site <input type="checkbox"/> Verification attached to this report	
<b>Energy Label</b>  Labels disclose the state the home's energy assets.	RESNET's HERS Rating (0 to 150): ____ <input type="checkbox"/> Sampling Rating <input type="checkbox"/> Projected Rating <input type="checkbox"/> Confirmed Rating	Estimated energy savings for this home: \$____/year ____¢kWh rate dated ____/____/____ <i>Energy Savings includes electricity, heating &amp; Cooling.</i> <i>Score below 100 indicates energy costs are expected to be lower than average local code home per square foot. HERS Index Report estimates energy cost based on number of bedrooms plus one. Only a "confirmed rating" is a diagnostic test.</i>		
	DOE's Home Energy Score Score (1 to 10): ____ <input type="checkbox"/> Official Score <input type="checkbox"/> Unofficial Score	Estimated energy savings for this home: \$____/year ____¢kWh rate dated ____/____/____ <i>Energy Savings includes electricity, heating &amp; Cooling.</i> <i>Score above five indicates energy costs are expected to be lower than average local home. Home Energy Score estimates energy cost based on state average energy rates and the home's energy features.</i>		
	Other Energy Score: Range ( ____ to ____ ): ____	Estimated energy savings: \$____/year ____¢ kWh rate dated ____/____/____ Describe energy label system: _____		
	Date Verified: ____/____/____	Score or Rating Version: ____ Organization URL: <input type="checkbox"/> <a href="http://www.resnet.us/">www.resnet.us/</a> <input type="checkbox"/> <a href="http://www.homeenergyscore.gov">www.homeenergyscore.gov</a>		<b>ABOVE VALID ONLY IF CHECKED:</b> <input type="checkbox"/> Verification reviewed on site

# Healthier Home Habits



## Off-gassing

Select products that don't off gas chemicals into the air



## Cleaning products

Buy products with safer ingredients



## Remove shoes

Make a place by exits for shoes to limit pollutants



## Unscented Products

Skip scented anything



## Indoor plants

Many plants are known to clean air



## HEPA air cleaner

Portable, affordable, change filters, some also use UV light





What can I do NXT?



## Resources to Learn More



### NAR's GREEN Designation

People, property, planet, prosperity  
<http://green.realtor>



### CRD Microcourses

Ten short courses on  
<http://learning.realtor>



### Meetings

Playback Sustainability Summit, attend NAR NXT the REALTOR Experience, stop by Green Pavilion, serve on Sustainability Advisory Group  
<http://sustainability.realtor>



### Realtor Magazine

Summer 2022 issue featured many leaders and topics related to sustainability  
<http://magazine.realtor>



# NAR's Sustainability Training



1

Speaking  
Confidently  
About  
Sustainability in  
Real Estate

2

Knowing How  
Sustainability  
Affects Buyers  
and Sellers

3

Taking  
Sustainability  
Action

UNDERSTANDING BUYERS & SELLERS

- Select the house icon to hear advice from the REALTOR® Resource Team.
- Click the "X" in the top right-hand corner to close.

"I've been offered a dream job in the Midwest. I found a house in the hills surrounded by trees. But, how can I lower the risk of fires and floods there?"

Remember to take notes.

# NEW 1-HOUR COURSE!

## Intro to Sustainability & Resiliency: What REALTORS® Need to Know

Available online at [www.learning.realtor](http://www.learning.realtor)

"Compounded, the risk becomes a threat to property owners and those who finance them."

*Weathering the Storm, Washington Post*

"...it's imperative REALTORS® are prepared to plan for tomorrow and know how to respond and recover when disaster strikes."

*Weathering the Storm, Washington Post*

ACUTE RISKS

CHRONIC RISKS

TRANSITION RISKS

COMPOUND RISKS

I COMPLETED THE MODULE  
SPEAKING CONFIDENTLY ABOUT  
SUSTAINABILITY IN REAL ESTATE

Intro to Sustainability and Resiliency: What REALTORS® Need to Know

NATIONAL ASSOCIATION OF REALTORS® SUSTAINABILITY PROGRAM

KNOWLEDGEABLE

Logical

Tactical

Sustainable

Appreciated

Admired

Respected

Wise

Informed

Trusted

Far-Sighted

Sensible

Thoughtful

Problem-Solver

Caring


Confident

Good Neighbor

Professional

REALTOR®

# It Starts With YOU



Begin by implementing sustainability in your own home and business; for the myriad of benefits.

- Financial
- Improved performance experience
- Wellness
- Resiliency

Once you have first hand experience, discussing sustainability initiatives and actions with clients become second nature. You will be able to discuss your experience with research, product selection, rebates, hiring vendors, lifestyle experience, and MORE. That's delivering value!

# THANK YOU.

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THAT'S WHO WE 



NATIONAL  
ASSOCIATION OF  
REALTORS®