



**City of Boulder's rental housing
energy efficiency policy**

Presenter: Elizabeth Vasatka

September 19, 2019

**MWCG- Built Environment and Energy Advisory Committee
Presentation**

Background Information

- ▶ Boulder's Climate Action Plan (CAP) goals to reduce GHG emissions
 - ▶ 76% - GHG emissions in Boulder attributable to buildings
 - ▶ >50% - Boulder's housing is tenant occupied
 - ▶ RECO policy identified in CAP
- ▶ Process for developing ordinance
 - ▶ Public Process (> 1 year)
 - ▶ Working groups
 - ▶ Public forums
 - ▶ Financial case studies
- ▶ City Council adopted SmartRegs in September 2010 (Ordinance 7726) effective January 3, 2011

Why Rentals?

- ▶ 53% of housing is rental
- ▶ Split incentive for energy efficiency upgrades in rental units
- ▶ Rental license requirement already existed



Pay for property improvements

Pay utility bills

Market Failure

What are the requirements?

- ▶ Deadline of **December 31, 2018**; all rental units must comply with basic energy efficiency standards in order to maintain rental license
 - ▶ Each unit inside a rental building must be inspected and meet compliance.
- ▶ Two Methods of Compliance
 - ▶ Prescriptive Pathway - 100 pts on checklist plus 2 pts mandatory water conservation
 - ▶ Performance Pathway - <120 HERS rating
- ▶ 2011 - 2018 is voluntary/implementation period
- ▶ 2019 - SmartRegs non-compliance - rental license expires

Prescriptive Pathway/Checklist

- ▶ “Checklist audit” - designed to achieve a similar level of energy performance HERS 120
- ▶ Technical checklist completed by a trained and certified SmartRegs Inspectors (City of Boulder Class “G” licensed)
- ▶ Weigh potential impacts, prioritize various improvements, compare costs and additional points earned
- ▶ Checklist categories are weighted based on their impact to reduce carbon emissions

Prescriptive Pathway/Checklist

WALLS	Base:		Final:		
	R-VALUE	25%	50%	75%	100%
No Insulation	0	0	0	0	0
>R-3 Continuous	3	6	9	12	12
R-5 Continuous	4	8	12	15	15
R-13	5	10	15	20	20
Uninsulated Basement Wall	5	10	15	20	20
>R-19	5	11	16	21	21
Insulated Basement Wall	6	13	19	26	26
Shared Wall	6	13	19	26	26

WINDOWS/FENESTRATION	Base:		Final:		
	U-FACTOR	25%	50%	75%	100%
Single Metal (1.2 U-Factor)	0	0	0	0	0
Single Non-Metal* (.95 U-Factor)	0	1	1	2	2
Double Metal (.80 U-Factor)	1	2	3	4	4
Double Non-Metal* (.55 U-Factor)	2	3	5	6	6
0.35 U-Factor*	3	7	10	13	13
0.30 U-Factor	3	7	10	14	14
≤0.25 U-Factor	4	7	11	14	14

INFILTRATION	Base:		Final:	
	ACH _n	POINTS		
≤1.20 ACH _n		2		
0.75 ACH _n		4		
0.50 ACH _n		6		
≤0.35 ACH _n (ventilate per ASHRAE 62.2)		7		
TEST STATS:				
ACH _n :	Volume: _____			
CFM50: _____	n-Factor: _____			

CEILINGS	Base:		Final:		
	R-VALUE	25%	50%	75%	100%
No Insulation	0	0	0	0	0
R-19	6	12	18	24	24
R-30	6	13	19	26	26
>R-38	7	13	20	26	26
Shared Ceilings	7	14	20	27	27

FLOORS / FOUNDATIONS	Base:		Final:		
	SLAB ON GRADE	25%	50%	75%	100%
Slab Edge: R-0	2	3	5	6	6
Slab Edge: >R-5	2	4	5	7	7
Slab Edge: >R-10	2	4	6	8	8
Slab Edge: >R-10 AND Under Slab: >R-10	3	6	8	11	11

BELOW GRADE SLAB (Basement Slab)					
Basement Slab	2	4	6	8	8
FOUNDATION WALLS (Crawlspace)					
R-0	0	0	0	0	0
R-2	2	3	5	6	6
R-11	2	4	6	8	8
>R-19	2	5	7	9	9

FRAMED FLOORS (Only Available if No Ducts or HVAC Equipment are Located in Unconditioned Space Below Floor)					
Framed Floor: R-0	0	0	0	0	0
Framed Floor: R-13	3	5	8	11	11
Framed Floor: R-25	3	6	9	12	12
Framed Floor: >R-38	4	7	11	14	14
Shared Floor	4	8	11	15	15

DUCT LEAKAGE	Base:		Final:	
	CFM per 100 SF	POINTS		
80 cfm @ 25 Pa	0			
60 cfm @ 25 Pa	4			
40 cfm @ 25 Pa	9			
20 cfm @ 25 Pa	14			
≤10 cfm @ 25 Pa	17			
No Ducts	17			

DISTRIBUTION SYSTEM	Base:		Final:		
	LOCATION / INSULATION	25%	50%	75%	100%
Uninsulated Pipes/Ducts (In Unconditioned Space)	0	0	0	0	0
Pipes/Ducts Insulated (R-4) (In Unconditioned Space)	1	3	4	6	6
Pipes / Ducts Within Conditioned Space	2	3	5	7	7

*Historically designated properties and properties older than 50 years with wooden window frames that rehabilitate and install storm panels will receive credit at the 0.35 U-Value level.

HEATING	Base:		Final:	
	SPECIFICATION	POINTS		
Electric, Oil, or ASHP	0			
Gas 65% AFUE	0			
Gas 80% AFUE	13			
Gas 90% AFUE	17			
Gas 96% AFUE	19			
GSHP (COP 3.3)	29			
GSHP (COP 4.1)	38			
GSHP (COP 4.8)	43			

COOLING	Base:		Final:	
	SPECIFICATION	POINTS		
10 SEER or worse	0			
13 SEER	4			
15 SEER	6			
Direct Evaporative Cooler	6			
No Cooling	6			
17 SEER	7			
19 SEER	8			
Indirect Evaporative Cooler	8			
GSHP (≥ EER 13.6)	4			

LIGHTING	Base:		Final:	
	HIGH- EFFICACY LIGHTING (solar tubes/light tunnels counted as light fixtures)	POINTS		
0%	0			
25%	2			
50%	4			
75%	6			
100%	7			

HOT WATER	Base:		Final:	
	SPECIFICATION	POINTS		
Electric, Oil or Heat Pump	0			
Gas 0.56 EF	0			
Gas 0.60 EF	1			
Gas 0.64 EF	2			
Gas >0.82 EF	6			
Gas Boiler Side Arm (65% AFUE Boiler)	0			
Gas Boiler Side Arm (80% AFUE Boiler)	3			
Gas Boiler Side Arm (95% AFUE Boiler)	5			

WHOLE HOUSE FANS	Base:		Final:	
	SPECIFICATION	POINTS		
Whole House Fan	2			

REFRIGERATION	Base:		Final:	
	SPECIFICATION	POINTS		
750 kWh/year	0			
650 kWh/year	2			
450 kWh/year	3			
<350 kWh/year	4			

SOLAR THERMAL	Base:		Final:	
	SPECIFICATION	POINTS		
Points per 20 sq ft of collector surface area	8			

PHOTOVOLTAICS*	Base:		Final:	
	ARRAY RATED OUTPUT	POINTS		
Points per kW**	44			

OCCUPANT	Base:		Final:	
	MEASURE	POINTS		
Sub-Metering: Real Time Energy Monitoring Device	1			
Programmable Thermostat	1			
Provide Operation / Training Manual	1			
Tenant Attends Energy Conservation Class	1			

OTHER	Base:		Final:	
	MEASURE	POINTS		
Heat Pump Desuperheater	1			
Electronically Commutated Motor ("ECM")	3			
Passive Solar Design	Discretionary – approved by City of Boulder			
Innovative Practice	Discretionary – approved by City of Boulder			
Technically Impractical: Carbon Offsets	Must be Approved by City of Boulder (8 points per metric ton of CO2 offset)			

*Qualifying installations include power purchase agreements, solar leases, or verified subscription in Community Solar Garden.
**Units must earn 70 prescriptive pathway points in other categories to be eligible to earn PV points.

Decision Making Tool

CEILINGS

Base: 6 Final: 26

R-VALUE	25%	50%	75%	100%
No Insulation	0	0	0	0
R-19	6	12	18	24
R-30	6	13	19	26
<u>></u> R-38	7	13	20	26
Shared Ceilings	7	14	20	27



Scope/Compliance Exceptions

▶ Scope Exceptions

- ▶ Buildings built after 2001
- ▶ Any manufactured home
- ▶ Accessory Dwelling Units and **attached** Owner Accessory Units

▶ Compliance Exceptions

- ▶ Affordable Housing
 - ▶ Units weatherized after September 1994 according to state or federal subsidy program standards
 - ▶ Equivalent Performance/Innovative Materials/Methods/Equipment
 - ▶ Historic Buildings
 - ▶ Technically Impractical
- ▶ Exceptions must still complete an application for compliance

Compliance Process

1. Property owner gets Baseline SmartRegs Inspection done by G-Licensed Inspector.
2. **If compliant** - Inspector uploads checklist via Dropbox submission folder & sends inspection report to customer (PDF) - move to #5.
3. **If non-compliant** - Owner makes upgrades to reach 100 pts. & 2 water pts.
4. Inspector verifies final compliance & uploads Final SmartRegs Inspection checklist to Dropbox folder.
5. City hired contractor processes checklists/applications and issues compliance.
6. Compliance uploaded to Rental Housing License case & maps in docs & compliance status updated (if MF -all units must meet SR compliance to be compliant)



Inspectors

- ▶ City of Boulder Class G License
- ▶ Must meet minimum qualifications
- ▶ Training & testing - online/simulation, peer-to-peer, city staff and contractor meetings
- ▶ Ongoing support - mentoring
- ▶ Quality Assurance - annual report

EnergySmart

www.energysmartyes.com

- ▶ City/County service for homes and businesses - assist in making energy efficiency upgrades

- ▶ SmartRegs clients enroll in EnergySmart (pay for inspection)
 - ▶ Inspection with G-Licensed inspector
 - ▶ Assigned an energy advisor to assist through the process
 - ▶ Make decisions about upgrades to reach compliance
 - ▶ Access rebates for upgrades & help applying
 - ▶ Help navigate and evaluate contractor bids (qualified)
 - ▶ Free LED light bulbs and water saving devices installed into unit upon first inspection (up to 7 pts on checklist and 2 water pts).



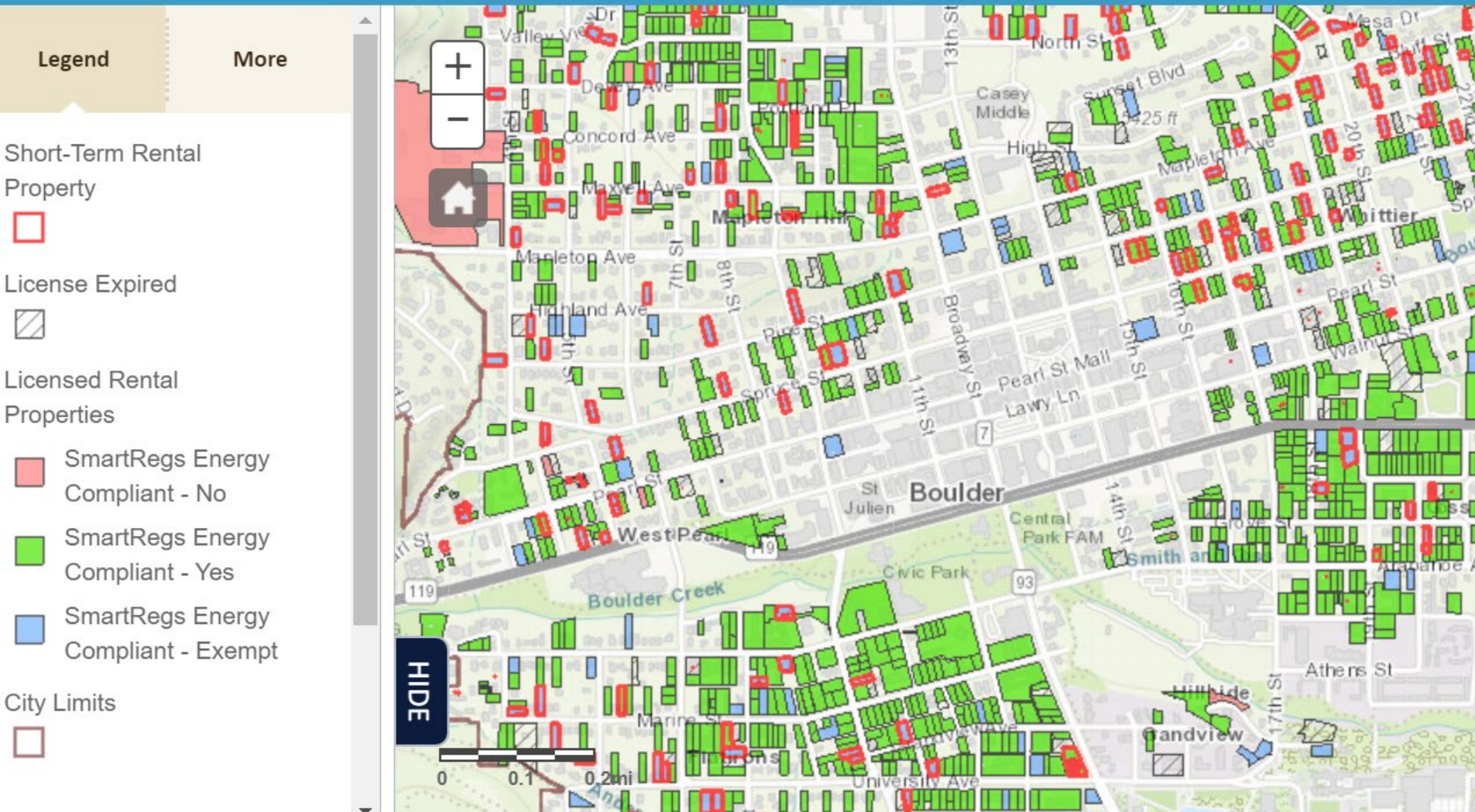
Incentives

- ▶ 2011 - 2013: LOTS of incentives
- ▶ 2014 - 2016: Fewer incentives
- ▶ 2016-2018: Advising services
- ▶ Encourage owners to plan ahead
 - ▶ Inspection with rental license renewal
 - ▶ Advising services and rebates/financial incentives
 - ▶ Market & City ability to handle too large of a push at the end
- ▶ 2018 - assistance vs. enforcement

Public Rental License Portal

CITY OF
BOULDER COLORADO

Rental Properties





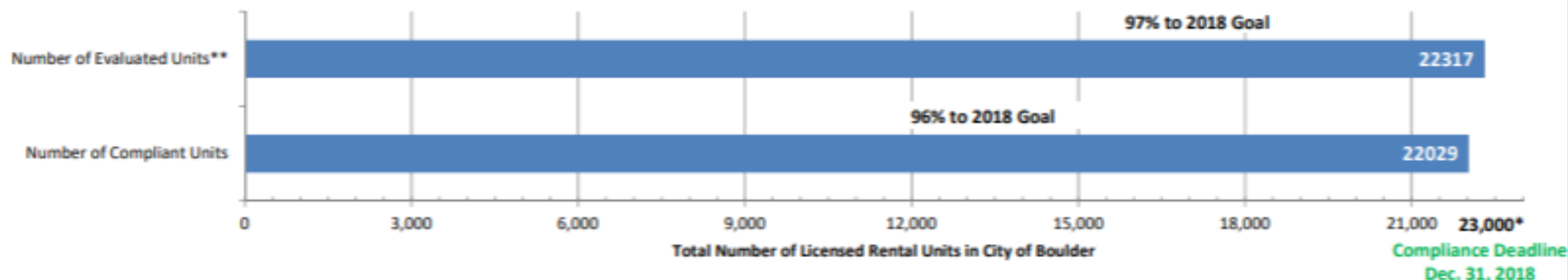
SmartRegs Program-to-Date Progress Report



This page summarizes progress to date since January 2011 in achieving the City of Boulder's energy efficiency goals through the SmartRegs ordinance. This progress reported is based on data from the EnergySmart service along with data from SmartRegs inspection reports.

PROGRAM PROGRESS

RESIDENTIAL LICENSED RENTAL UNITS PARTICIPATING IN SMARTREGS



ALL UNITS EVALUATED	UNITS EVALUATED THROUGH ENERGYSMART	REACHING COMPLIANCE THROUGH UPGRADES					
<p>2573, 12%</p> <p>3763, 17%</p> <p>288, 1%</p> <p>4485, 20%</p> <p>11208, 50%</p> <p>Total:</p> <ul style="list-style-type: none"> Non-Compliant Compliant at Baseline Compliant through EnergySmart Compliant by Exemption^{AA} Compliant by Upgrades (Non-EnergySmart) 	<p>32, 0%</p> <p>117, 1%</p> <p>1375, 18%</p> <p>3223, 41%</p> <p>3110, 40%</p> <p>Total: 7,857</p> <ul style="list-style-type: none"> Non-Compliant Compliant at Baseline Compliant by Upgrades^A Compliant by Quick Installs^A Compliant by Exemption^{AA} 	Median Number of Points for Non-Compliant Units to Reach Compliance	14	Most Common Upgrades to Reach Compliance (with average cost)			
		Average Number of Upgrades to Reach Compliance	2				
		Average Cost of Upgrades to Reach Compliance	\$3,022			Attic Insulation	\$1,516
		Average Total Rebates (County + City) to Reach Compliance (For Properties that Received at Least 1 Rebate)	\$579			Crawlspace Insulation	\$1,921
				Wall Insulation	\$2,040		

ENERGYSMART MARKET & COMMUNITY IMPACT

LEVEL OF INVESTMENT		DEEMED ANNUAL SAVINGS***			
Private Investment	Rebate : Private Investment	kWh	Cost	Electricity savings to date from SmartRegs improvements are equivalent to taking 928 cars off the road each year!	
\$7,162,548	Ratio	1,935,554	\$519,625		
Total Rebates Paid	\$1 : \$8.05	Therms	mtCO2		
\$889,571		459,253	3,917		



SmartRegs Benefits

- ▶ Provides a basic level of energy efficiency in rental housing stock
- ▶ Inclusionary program for low-to-moderate income renters
- ▶ Increased tenants' "right" for an energy efficient unit and property owners' knowledge of their property
- ▶ Expanded the expectation of health and safety in Boulder's code for property owners' rental license requirements
- ▶ Supported and grew residential energy efficiency workforce



BETTER RENTALS, BETTER CITY

SMART POLICIES TO IMPROVE YOUR CITY'S RENTAL HOUSING
ENERGY PERFORMANCE

BY ALINA PETERSEN AND RACHAEL LALIT

SmartRegs Resources

SmartRegs: www.bouldercolorado.gov/smartregs

EnergySmart : www.energysmartyes.com
303-544-1001 (Efficiency upgrade advisors and financial rebates)

Rocky Mountain Institute (RMI)
Better Rentals, Better City
rmi.org/how-cities-ensure-better-rentals-for-everyone

Elizabeth Vasatka
City of Boulder
vasatkae@bouldercolorado.gov
303-441-1964