



MARIN

GREEN
BUILDING,
ENERGY
RETROFIT &
SOLAR
TRANSFORMATION



Who is Marin Green **BERST**?

A **Task Force** composed of elected or appointed representatives from each Marin city, town and the County to develop policy recommendations and champion these efforts within their jurisdictions.

A **Technical Advisory Committee** of volunteers with expertise in construction, energy efficiency and conservation to advise the Task Force.



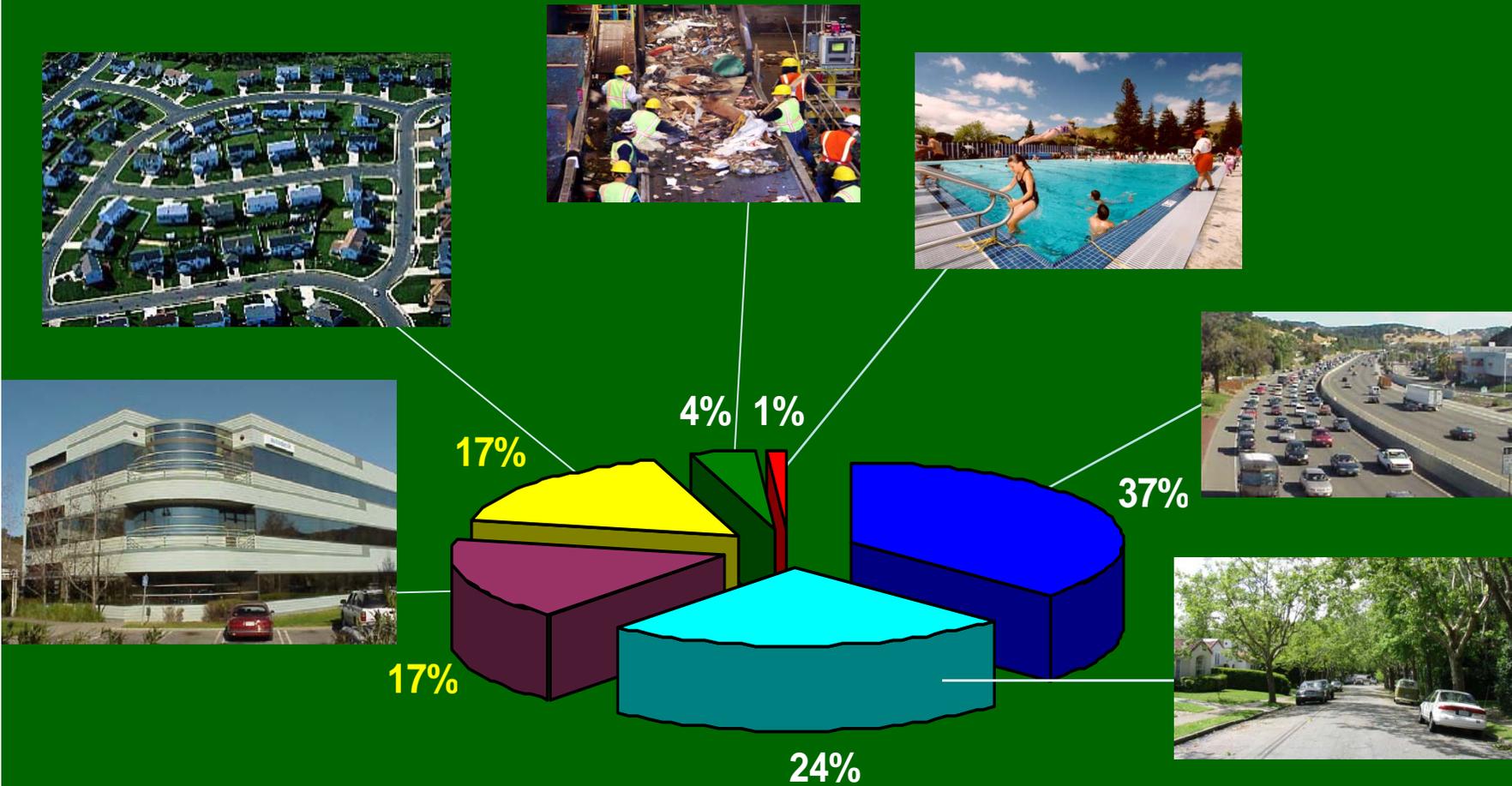
Who is Marin Green BERST?

Technical Advisory Committee composition:

- 2 Building Officials (Novato and Belvedere)
- 3 Architects
- 2 Contractors
- Energy efficiency/green building auditor
- Energy consultant
- Marin Builders Association
- Marin Association of Realtors
- Marin Energy Authority
- PG&E
- Strategic Energy Innovations
- MMWD
- Marin Conservation League
- Marin County Planning Directors

Why Marin Green BERST?

Results of San Rafael's Greenhouse Gas Inventory:



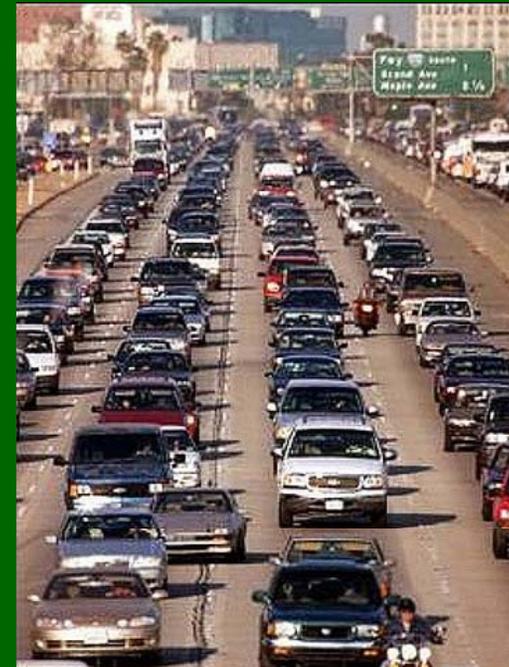
Marin Green **BERST**

Energy Efficiency

20% gain in energy efficiency of existing buildings

=

Removing 1/2 of all cars from the road



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Objectives

1. Regulations which are consistently implemented across Marin jurisdictions.
2. Regulations which achieve, in priority order:
 - Energy savings
 - Greenhouse gas reductions
 - Water conservation
 - Practicality of implementation
 - Cost effectiveness
 - Improved indoor air quality & occupant health
 - Resource conservation
 - Adaptability for future technology
 - Effective marketing
 - Environmental protection



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Endorsements

Model Green Building Ordinance endorsed by:

- Marin Green BERST Task Force
- Marin Builders Association Green Building Committee



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Recommendations: Residential

Covered Project	Green Building Rating System	Minimum Compliance Threshold	Energy Budget Below CA Title 24 Part 6	Verification
Single-Family or Two-Family Residential: New construction				
500-2,499 sq. ft.	GPR New Home	75 points	15%	Green Point Rated ¹
2,500-3,999 sq. ft.	GPR New Home	100 points	15%	Green Point Rated ¹
4,000-5,499 sq. ft.	GPR New Home	125 points	20%	Green Point Rated ¹
5,500-6,999 sq. ft.	GPR New Home	150 points	30%	Green Point Rated ¹
7,000+ sq. ft.	GPR New Home	200 points	Net zero energy	Green Point Rated ¹



Marin Green BERST

Recommendations: Residential

Cost Estimates – New Single Family

- GreenPoint Rater: \$1,500-2,500
- BIG GreenPoint Rated certification: \$450
- Cost of energy upgrades: ~\$1/sq. ft. (~0.5% of project cost)
- \$200 annual energy savings ≈ \$40,000 savings over the life of the building



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Recommendations: Residential

Covered Project	Green Building Rating System	Minimum Compliance Threshold	Energy Budget Below CA Title 24 Part 6	Verification
Multi-Family Residential: New Construction				
Less than 1,000 sq. ft. ave. unit size	GPR Multi-Family	60 points	15%	GreenPoint Rated ¹
1,000+ sq. ft. average unit size	GPR Multi-Family	75 points	15%	GreenPoint Rated ¹



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Recommendations: Residential

Covered Project	Green Building Rating System	Minimum Compliance Threshold	Verification
Single-Family or Two-Family Residential: Renovations (including additions to existing buildings)			
Less than \$50,000 valuation	n/a	Insulate exposed hot water pipes; Install radiant barrier when reroofing and removing sheathing	City building inspector
\$50,000-\$99,999 valuation or less than 500 sq. ft. ³	GPR Existing Home	Checklist submittal and completion of a HERSII or BPI home performance audit	City plan check
\$100,000-\$149,999 valuation or 500-749 sq. ft. ³	GPR Existing Home – Elements	25 points	GreenPoint Rater ²
\$150,000-\$299,999 valuation or 750-999 sq. ft. ³	GPR Existing Home – Elements	35 points	GreenPoint Rater ²
\$300,000+ valuation or 1,000+ sq. ft. ³	GPR Existing Home – Whole House	50 points + 20% improvement in HERSII or BPI home performance audit results or a minimum HERSII score of 100	GreenPoint Rated ²



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Recommendations: Residential

Cost Estimates – Renovated Single Family

- HERSII or BPI home performance audit:
\$350 - \$800
- GreenPoint Rater: \$750-1,500 (can be the project architect)
- No reliable data on the cost of upgrades



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Recommendations: Non-Residential

Covered Project	Green Building Rating System	Minimum Compliance Threshold	Energy Budget Below CA Title 24 Part 6	Verification
New Construction (including additions to existing buildings)				
2,000-4,999 sq. ft.	LEED® New Construction or Core & Shell	Checklist submittal + compliance with Prerequisites		LEED® AP with additional GreenPoint Rater or BPI Certification
5,000-49,999 sq. ft.	LEED® New Construction or Core & Shell	LEED® Silver	15%	LEED® AP with additional GreenPoint Rater or BPI Certification
50,000+ sq. ft.	LEED® New Construction or Core & Shell	LEED® Gold	15%	GBCI Certified



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Recommendations: Non Residential Cost Estimates – New Office

- LEED AP: depends on project scope - can be the project architect
- Cost of energy upgrades: ~\$1.50-2.50/sq. ft. (~0.5% – 0.8% of project cost)
- Overall cost of LEED upgrades: ~1-6% of construction cost
- LEED certification (only buildings 50,000sf+): \$10,000+?



Marin Green BERST

Recommendations: Non-Residential

Covered Project	Green Building Rating System	Minimum Compliance Threshold	Verification
Renovations			
Less than \$500,000 valuation or 500-4,999 sq. ft. ³	LEED® Commercial Interiors or Operations & Maintenance	Voluntary compliance with the following Prerequisites: WE P1 (Water Efficiency–Baseline Requirements only) ⁴ EA P3 (Fundamental Refrigerant Management) for renovations of $\geq 50\%$ of the building interior area Voluntary compliance with the following Credits: EA C1.3 (Optimize Energy Performance – HVAC) for renovations of $\geq 50\%$ of the building interior area	None
\$500,000 - \$5 million valuation or 5,000-24,999 sq. ft. ³	LEED® Commercial Interiors or Operations & Maintenance	Same as above, but Required.	City building inspector
Greater than \$5 million valuation or 25,000+ sq. ft. ³	LEED® Commercial Interiors or Operations & Maintenance	LEED® Silver	LEED® AP with additional GreenPoint Rater or BPI Certification



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Cost Effectiveness Study

- Calif. Energy Commission must approve cost effectiveness to exceed Title 24 reqmts.
- Study examined 12 prototypical new single family homes, 4 new multi-family projects and 4 new office buildings
- Generally, additional costs for energy upgrades is about \$1/sq. ft. (except 7,500sf single family “net zero energy” home)
- Average simple payback in ~13 – 20 years



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