Projekt


U.S. GREEN BUILDING COUNCIL
LEED
USGBC


U.S. GREEN BUILDING COUNCIL
LEED GOLD
USGBC


U.S. GREEN BUILDING COUNCIL
LEED SILVER
USGBC


LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LEED
PLATINUM
2013

LEED 2009 for New Construction and Major Renovations

Project Checklist

Project Name

Date

Sustainable Sites — Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicl	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

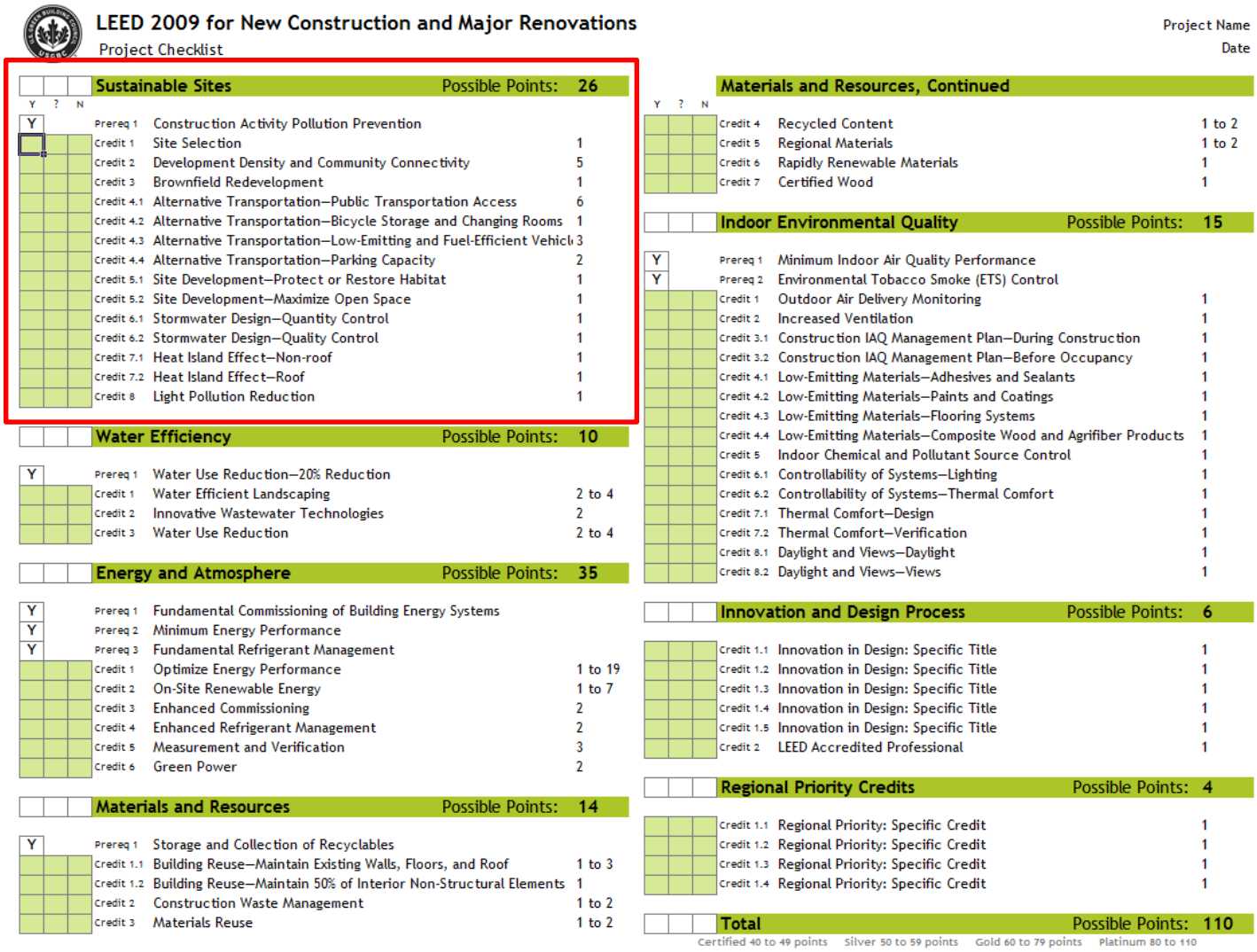
Regional Priority Credits — Possible Points: 4

			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

LEED kategórie



LEED 2009 for New Construction and Major Renovations

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Project Name

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Sustainable Sites				Possible Points:	26
Y			Prereq 1	Construction Activity Pollution Prevention	
			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicl	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1
Water Efficiency				Possible Points:	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4
Energy and Atmosphere				Possible Points:	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2
Materials and Resources				Possible Points:	14
Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Y	?	N			
Materials and Resources, Continued					
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1
Indoor Environmental Quality				Possible Points:	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1
Innovation and Design Process				Possible Points:	6
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1
Regional Priority Credits				Possible Points:	4
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1
Total				Possible Points:	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Udržateľné miesto výstavby

e-dome free energy living

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			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicl	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

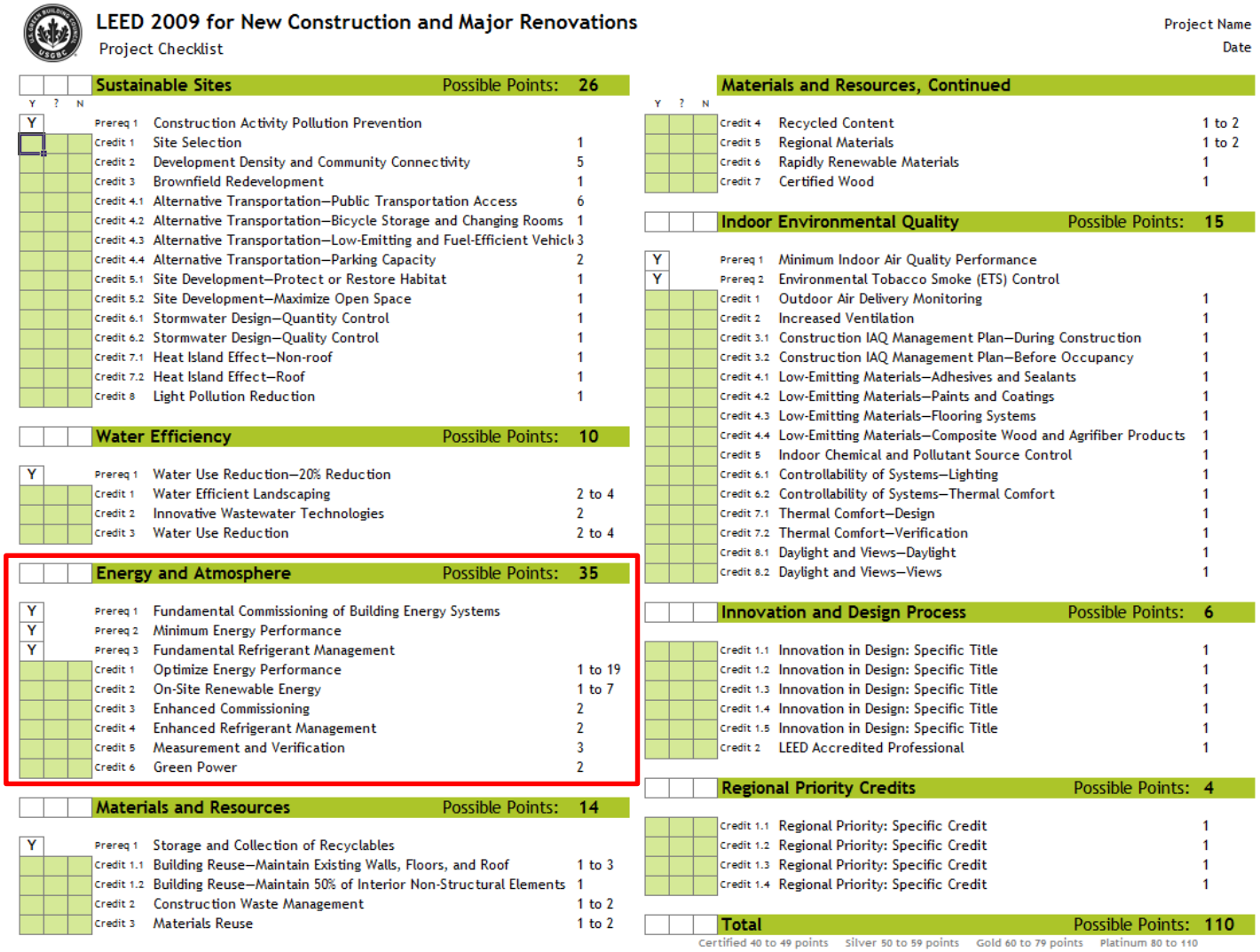
Regional Priority Credits — Possible Points: 4

			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Voda



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Date

Y	?	N			
Sustainable Sites				Possible Points:	26
Y			Prereq 1	Construction Activity Pollution Prevention	
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			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicl	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1
Water Efficiency				Possible Points:	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4
Energy and Atmosphere				Possible Points:	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2
Materials and Resources				Possible Points:	14
Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Y	?	N			
Materials and Resources, Continued					
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1
Indoor Environmental Quality				Possible Points:	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1
Innovation and Design Process				Possible Points:	6
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1
Regional Priority Credits				Possible Points:	4
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
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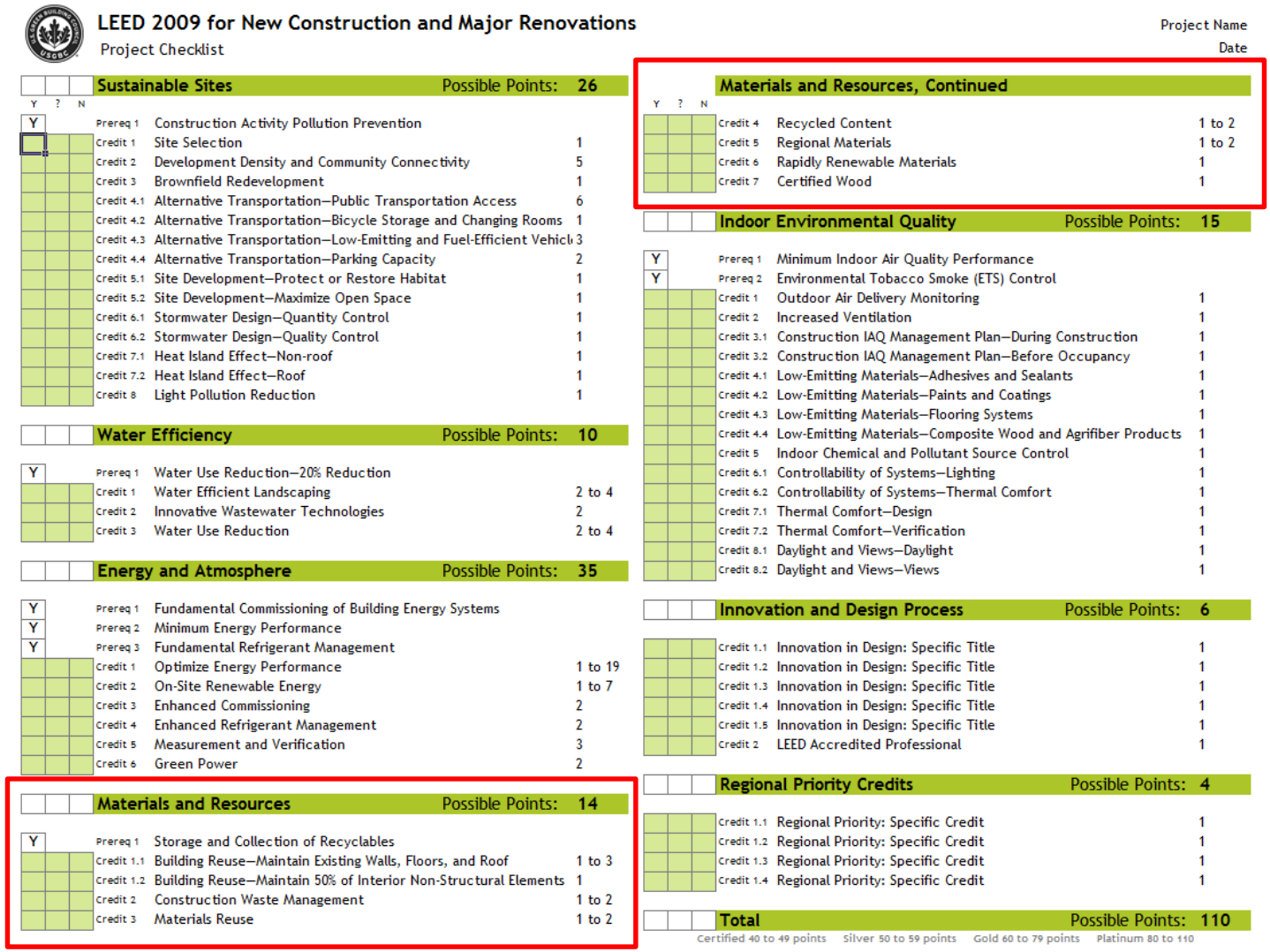
Total				Possible Points:	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Energia



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			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
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Water Efficiency				Possible Points:	10
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			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2
Materials and Resources, Continued					
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
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Indoor Environmental Quality				Possible Points:	15
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			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
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			Credit 5	Indoor Chemical and Pollutant Source Control	1
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Innovation and Design Process				Possible Points:	6
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Regional Priority Credits				Possible Points:	4
			Credit 1.1	Regional Priority: Specific Credit	1
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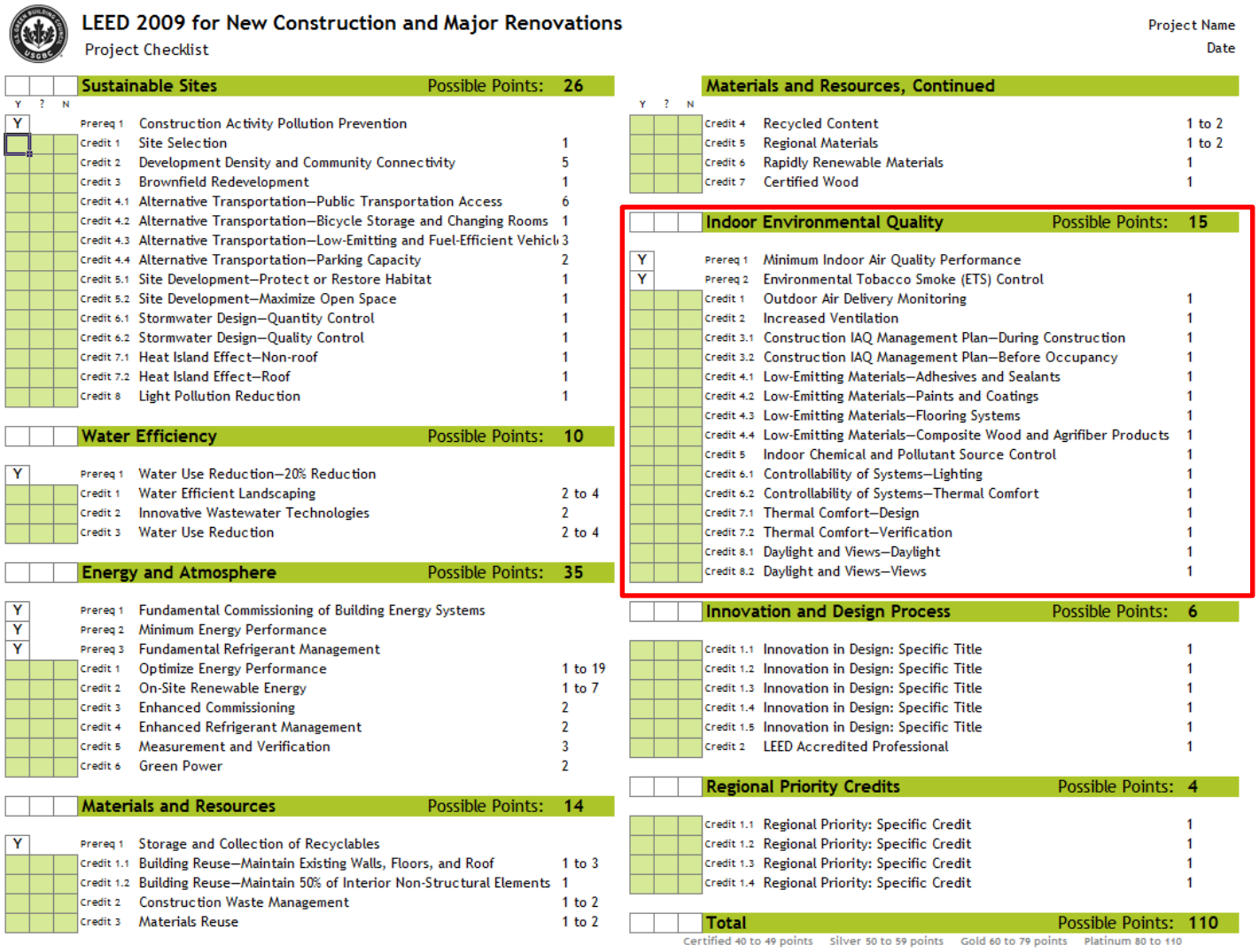
Materiály



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			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1
Innovation and Design Process				Possible Points:	6
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1
Regional Priority Credits				Possible Points:	4
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1
Total				Possible Points:	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Kvalita vnútorného prostredia

e-dome free energy living

			Total	Possible Points: **110**
Certified 40 to 49 points	Silver 50 to 59 points	Gold 60 to 79 points	Platinum 80 to 110	

Hranice úrovní

25			Sustainable Sites	Possible Point	26
Y		N			
			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
		1	Credit 8	Light Pollution Reduction	1

- Pôvodné a prispôsobené druhy
- Dažďová voda
- Ochrana alergikov (opeľovanie hmyzom vs vetrom)

Udržateľné miesto výstavby

6			**Water Efficiency**	Possible Poin	**10**
			Prereq 1	Water Use Reduction—20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2		2	Credit 3	Water Use Reduction	2 to 4

- Perlátory
- Úsporné sprchové hlavice
- Fit-out Guide

Voda

33		2	**Energy and Atmosphere**	Possible Poin	35
			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
19			Credit 1	Optimize Energy Performance	1 to 19
7			Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
		2	Credit 6	Green Power	2

- PV na zelenej streche (životnosť)
- Efekt tepelného ostrova (heat island effect)
- Zadržanie vody a izolácia

Energia

6			**Materials and Resources**	Possible Poin	14
			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2
1		1	Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1

- Zachovať
- Znovupoužiť
- Recyklovať

Materiály

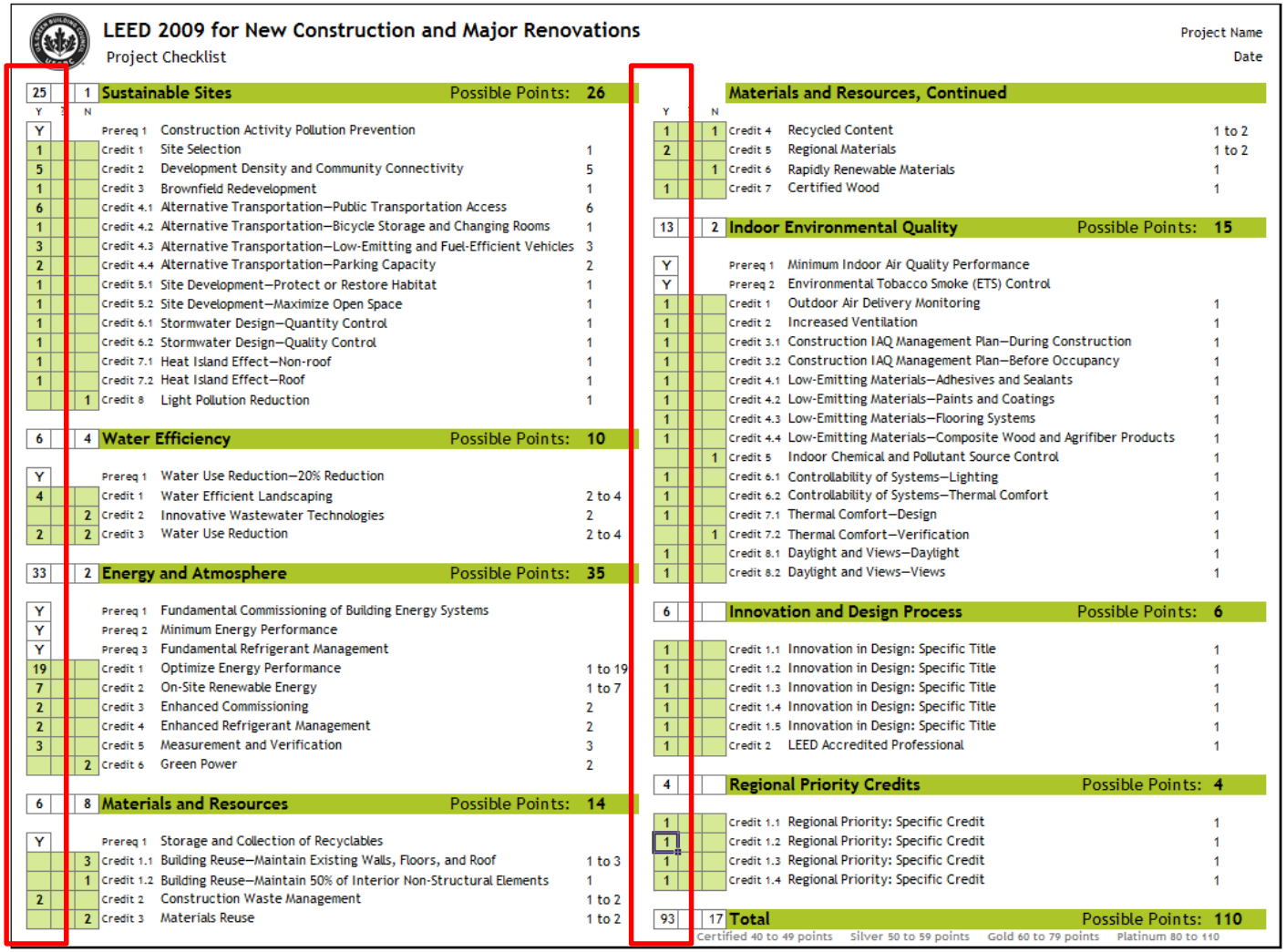
13		2	**Indoor Environmental Quality**	Possible Poin	15
			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
		1	Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
1			Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1

- 0 ppm VOC alebo 100x nižší ako limit
- Testovanie obsahu VOC v zariadených priestoroch
- 2. front ochrany alergikov (filtre F7)

Kvalita vnútorného prostredia

6			**Innovation and Design Process**	Possible Points	6
1			Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
4			**Regional Priority Credits**	Possible Point	4
1			Credit 1.1	Regional Priority: Specific Credit	1
1			Credit 1.2	Regional Priority: Specific Credit	1
1			Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1

LEED



LEED 2009 for New Construction and Major Renovations

Project Checklist

Project Name

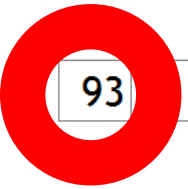
Date

Y	?	N			
25		1	**Sustainable Sites**	Possible Points:	26
Y			Prereq 1	Construction Activity Pollution Prevention	
1			Credit 1	Site Selection	1
5			Credit 2	Development Density and Community Connectivity	5
1			Credit 3	Brownfield Redevelopment	1
6			Credit 4.1	Alternative Transportation—Public Transportation Access	6
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
3			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
2			Credit 4.4	Alternative Transportation—Parking Capacity	2
1			Credit 5.1	Site Development—Protect or Restore Habitat	1
1			Credit 5.2	Site Development—Maximize Open Space	1
1			Credit 6.1	Stormwater Design—Quantity Control	1
1			Credit 6.2	Stormwater Design—Quality Control	1
1			Credit 7.1	Heat Island Effect—Non-roof	1
1			Credit 7.2	Heat Island Effect—Roof	1
		1	Credit 8	Light Pollution Reduction	1
6		4	**Water Efficiency**	Possible Points:	10
Y			Prereq 1	Water Use Reduction—20% Reduction	
4			Credit 1	Water Efficient Landscaping	2 to 4
		2	Credit 2	Innovative Wastewater Technologies	2
2		2	Credit 3	Water Use Reduction	2 to 4
33		2	**Energy and Atmosphere**	Possible Points:	35
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
19			Credit 1	Optimize Energy Performance	1 to 19
7			Credit 2	On-Site Renewable Energy	1 to 7
2			Credit 3	Enhanced Commissioning	2
2			Credit 4	Enhanced Refrigerant Management	2
3			Credit 5	Measurement and Verification	3
		2	Credit 6	Green Power	2
6		8	**Materials and Resources**	Possible Points:	14
Y			Prereq 1	Storage and Collection of Recyclables	
		3	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
		1	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
2			Credit 2	Construction Waste Management	1 to 2
		2	Credit 3	Materials Reuse	1 to 2

Y		N			
			Materials and Resources, Continued		
1		1	Credit 4	Recycled Content	1 to 2
2			Credit 5	Regional Materials	1 to 2
		1	Credit 6	Rapidly Renewable Materials	1
1			Credit 7	Certified Wood	1
13		2	**Indoor Environmental Quality**	Possible Points:	15
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
1			Credit 1	Outdoor Air Delivery Monitoring	1
1			Credit 2	Increased Ventilation	1
1			Credit 3.1	Construction IAQ Management Plan—During Construction	1
1			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
1			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
1			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
1			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
1			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
		1	Credit 5	Indoor Chemical and Pollutant Source Control	1
1			Credit 6.1	Controllability of Systems—Lighting	1
1			Credit 6.2	Controllability of Systems—Thermal Comfort	1
1			Credit 7.1	Thermal Comfort—Design	1
		1	Credit 7.2	Thermal Comfort—Verification	1
1			Credit 8.1	Daylight and Views—Daylight	1
1			Credit 8.2	Daylight and Views—Views	1
6			**Innovation and Design Process**	Possible Points:	6
1			Credit 1.1	Innovation in Design: Specific Title	1
1			Credit 1.2	Innovation in Design: Specific Title	1
1			Credit 1.3	Innovation in Design: Specific Title	1
1			Credit 1.4	Innovation in Design: Specific Title	1
1			Credit 1.5	Innovation in Design: Specific Title	1
1			Credit 2	LEED Accredited Professional	1
4			**Regional Priority Credits**	Possible Points:	4
1			Credit 1.1	Regional Priority: Specific Credit	1
1			Credit 1.2	Regional Priority: Specific Credit	1
1			Credit 1.3	Regional Priority: Specific Credit	1
1			Credit 1.4	Regional Priority: Specific Credit	1
93		17	**Total**	Possible Points:	110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Hodnotenie



93	17	Total	Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Hodnotenie


LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LEED
PLATINUM
2013

top 7%

LEED Platinum

- Bioalkohol
- FSC certifikované lesy na Slovensku – Prešov a Trenčín – 86 000 hektárov
- Zelená strecha, odrazivé materiály vs zber vody (kompromis)

Zaujímavosti

- Pre/post consumer recycled content
- Papier, kartónový papier (vlnitá lepenka), sklo, plasty a kovy.
- 800 km polomer

Zaujímavosti

- Meranie denného osvetlenia
- VOC
- Spracovanie zeminy a moje skúsenosti

Zaujímavosti

Table 4-1 Target CREL VOCs and their maximum allowable concentrations

No.	Compound Name	CAS No.	Allowable Conc.[a] ($\mu g/m^3$)
1	Acetaldehyde	75-07-0	70
2	Benzene	71-43-2	30
3	Carbon disulfide	75-15-0	400
4	Carbon tetrachloride	56-23-5	20
5	Chlorobenzene	108-90-7	500
6	Chloroform	67-66-3	150
7	Dichlorobenzene (1,4-)	106-46-7	400
8	Dichloroethylene (1,1)	75-35-4	35
9	Dimethylformamide (N,N-)	68-12-2	40
10	Dioxane (1,4-)	123-91-1	1,500
11	Epichlorohydrin	106-89-8	1.5
12	Ethylbenzene	100-41-4	1,000
13	Ethylene glycol	107-21-1	200
14	Ethylene glycol monoethyl ether	110-80-5	35
15	Ethylene glycol monoethyl ether acetate	111-15-9	150
16	Ethylene glycol monomethyl ether	109-86-4	30
17	Ethylene glycol monomethyl ether acetate	110-49-6	45
18	Formaldehyde	50-00-0	16.5 [b]
19	Hexane (n-)	110-54-3	3,500
20	Isophorone	78-59-1	1,000
21	Isopropanol	67-63-0	3,500
22	Methyl chloroform	71-55-6	500
23	Methylene chloride	75-09-2	200
24	Methyl *t*-butyl ether	1634-04-4	4,000
25	Naphthalene	91-20-3	4.5
26	Phenol	108-95-2	100
27	Propylene glycol monomethyl ether	107-98-2	3,500
28	Styrene	100-42-5	450
29	Tetrachloroethylene	127-18-4	17.5
30	Toluene	108-88-3	150
31	Trichloroethylene	79-01-6	300
32	Vinyl acetate	108-05-4	100
33-35	Xylenes, technical mixture (m-, o-, p-xylene combined)	108-38-3, 95-47-6, 106-42-3	350

a) Refer to http://www.oehha.ca.gov/air/chronic_rels/AllChrels.html. All maximum allowable concentrations

VOC

- LEED poslanie – zmeniť stavebníctvo
- WEc1 – 87% (bez pitnej vody na polievanie, BBC1plus)
- SSc3 – 17% (Brownfield)
- EAc2 – 24% (OZ)

LEED stats

e- dome
free energy living

Hodnota LEED / BREEAM

SKGBC
SLOVAK GREEN BUILDING COUNCIL

BREEAM
LISTED ASSESSOR

U.S. GREEN BUILDING COUNCIL MEMBER

Obsah

1. Náklady LEED
2. Hodnota LEED
3. Náklady BREEAM
4. Hodnota BREEAM
5. Rozšírenosť cert. systémov
6. Možnosť marketingu pri rez. Projektoch
7. Risk management
8. Výhody, nevýhody využitia BREEAM pre rez. projekty
9. Výhody, nevýhody využitia LEED pre rez. projekty
10. Záverečné porovnanie

Náklady LEED

0-2% (5-10%) (USGBC)

1-7% (Arcadis)

1-10.3% (Costing Green; Davis Langdon)

2.4% (residential) (USGBC Illinois)

1.800 – 2.500 EUR/ LEED Silver byt (Zdroj: alliancees.org)

0-3% (skypaper.cz)

Náklady LEED

- Zvýšenie nákladov projektu **0-2% pri zapojení akreditovaného profesionála počas prípravnej fázy, 5-10%, ak sa udržateľnosť stane cieľom neskôr.** (zdoj: USGBC)

- Zvýšenie nákladov 1-7% (Arcadis)

- Zvýšenie nákladov projektu 1-10.3% (Costing Green; Davis Langdon; July 2004)

- Náklady na stavbu LEED cert. bytov o 2.4% vyššie (Zdroj: USGBC Illinois; 2012)

- Náklady na LEED Silver certifkáciu bytu v priemere náklad 1.800 – 2.500 EUR (Zdroj: alliancees.org)

- Skúsenosti zo slovenského a českého trhu ukazujú, že náklad na certifikáciu, vrátane vyvolaných nákladov, **predstavuje 0-3 %, v závislosti od cielenej úrovne a fázy, kedy sa začne prihliadať na požiadavky systémov.** ("Praha má více „zelených" kanceláří než činí evropský průměr" http://www.skypaper.cz/novinky/praha-ma-vice-zelenych-kancelari-nez-cini-evropsky-prumer/)

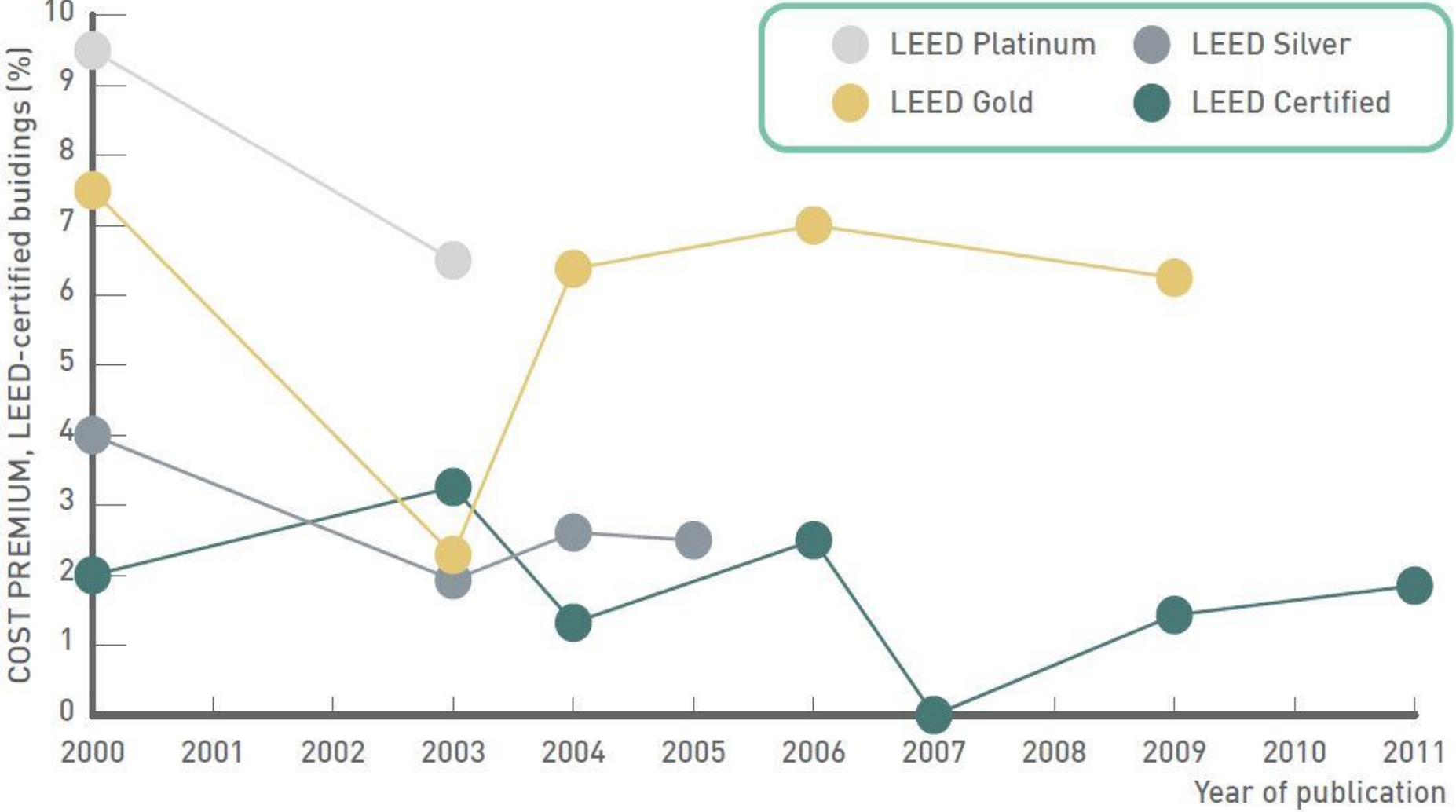


Figure 3

Reported cost premiums associated with LEED certification in the United States showing the gradual reduction of premiums over time, averaged values from various sources[17]

Náklady LEED

1-7%

Náklady LEED

Vnímanie ceny certifikácie je však podstatne vyššie.
Na trhu sa u väčšiny odborníkov pohybujú odhady na úrovni **5-30%**.
Dôvodom je nízka úroveň povedomia a znalosti cert. systémov!

5-30%

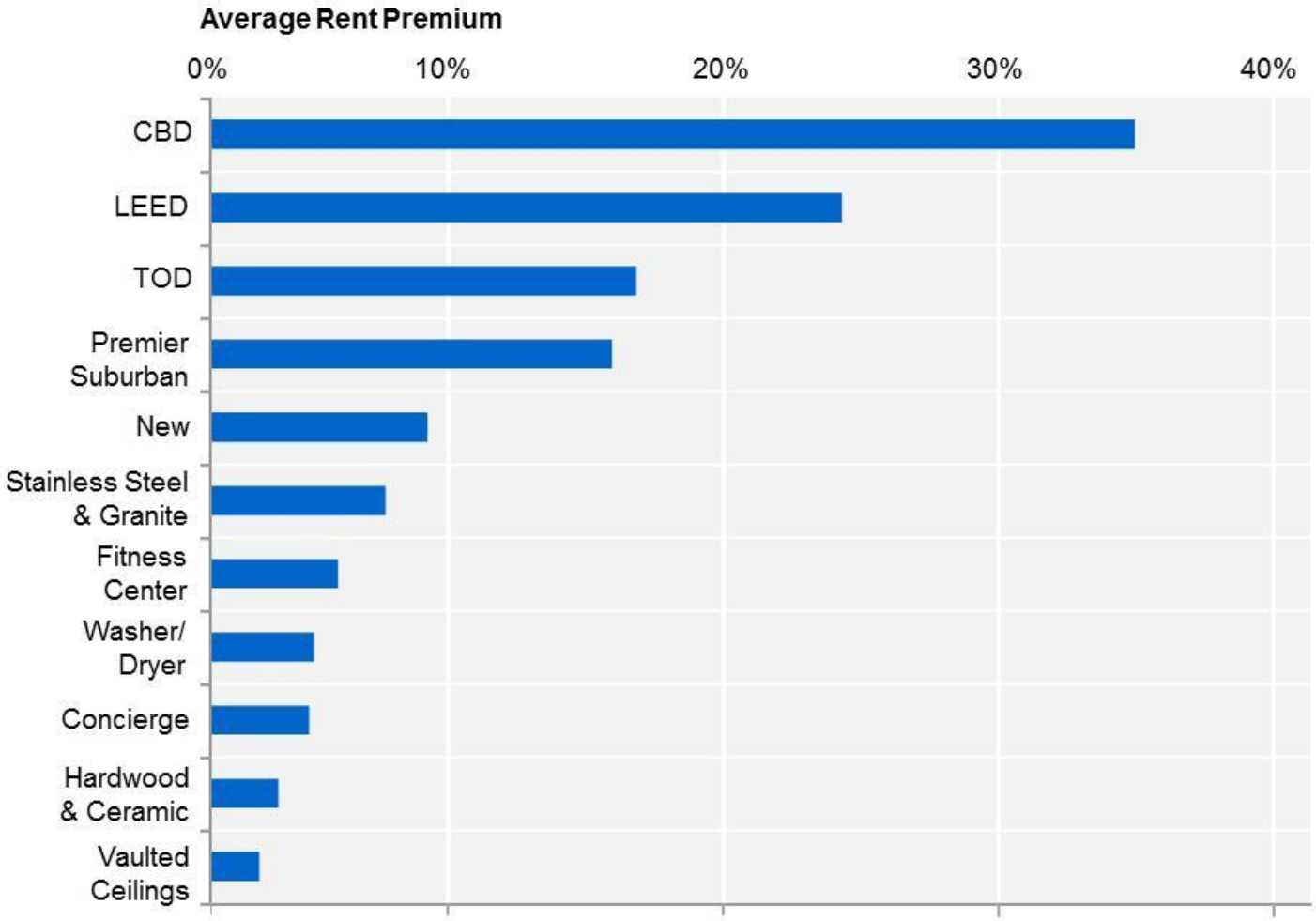
Náklady LEED

5-30% VS 1-7%

Hodnota LEED

- **24%** vyššia prenájom certifikovaných rez. budov (Zdroj: CoStar Group)
- **9%** vyššia hodnota LEED rez. priestorov v priemere (Zdroj: USGBC Illinois; 2012)
- **11%** vyšší nájom u klientov a vyššia obsadenosť (Zdroj: USGBC)
- **8%** vyššia hodnota ako necertifikované projekty. (Zdroj: USGBC)

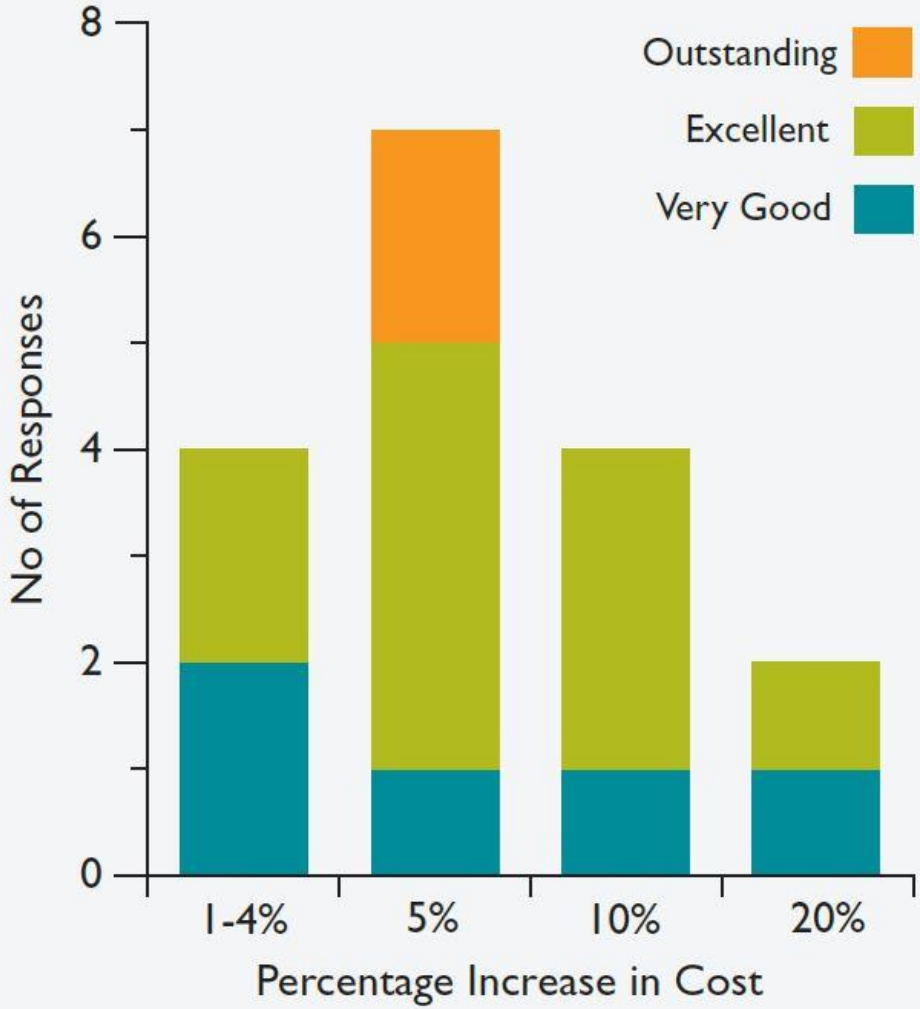
EXHIBIT 1: THE 30,000 FOOT VIEW OF APARTMENT RENT PREMIUMS BY ATTRIBUTE



Sources: CoStar Group, Inc.; PPR

As of 13Q1

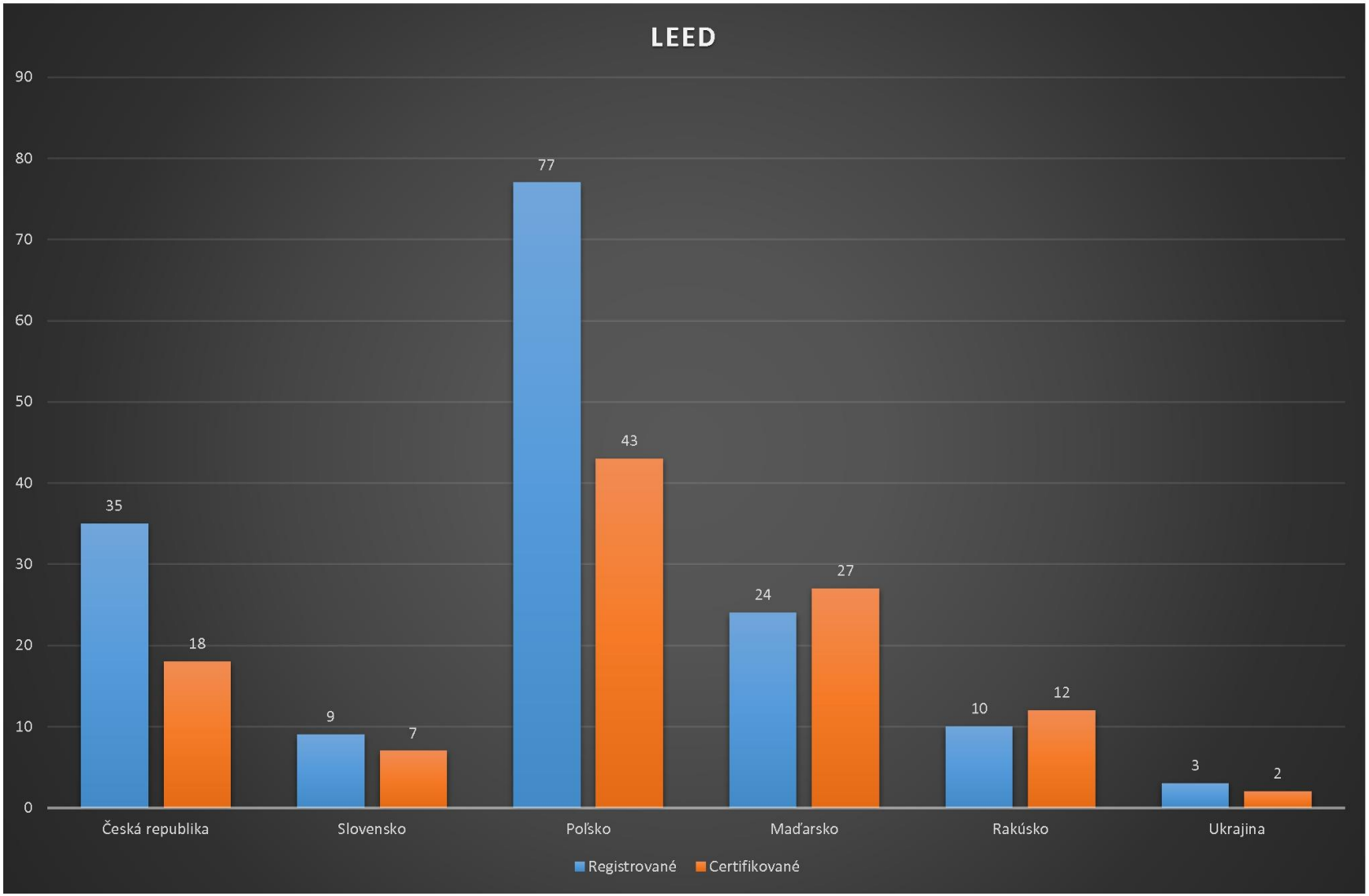
Figure 11 : Increase in costs for BREEAM projects.

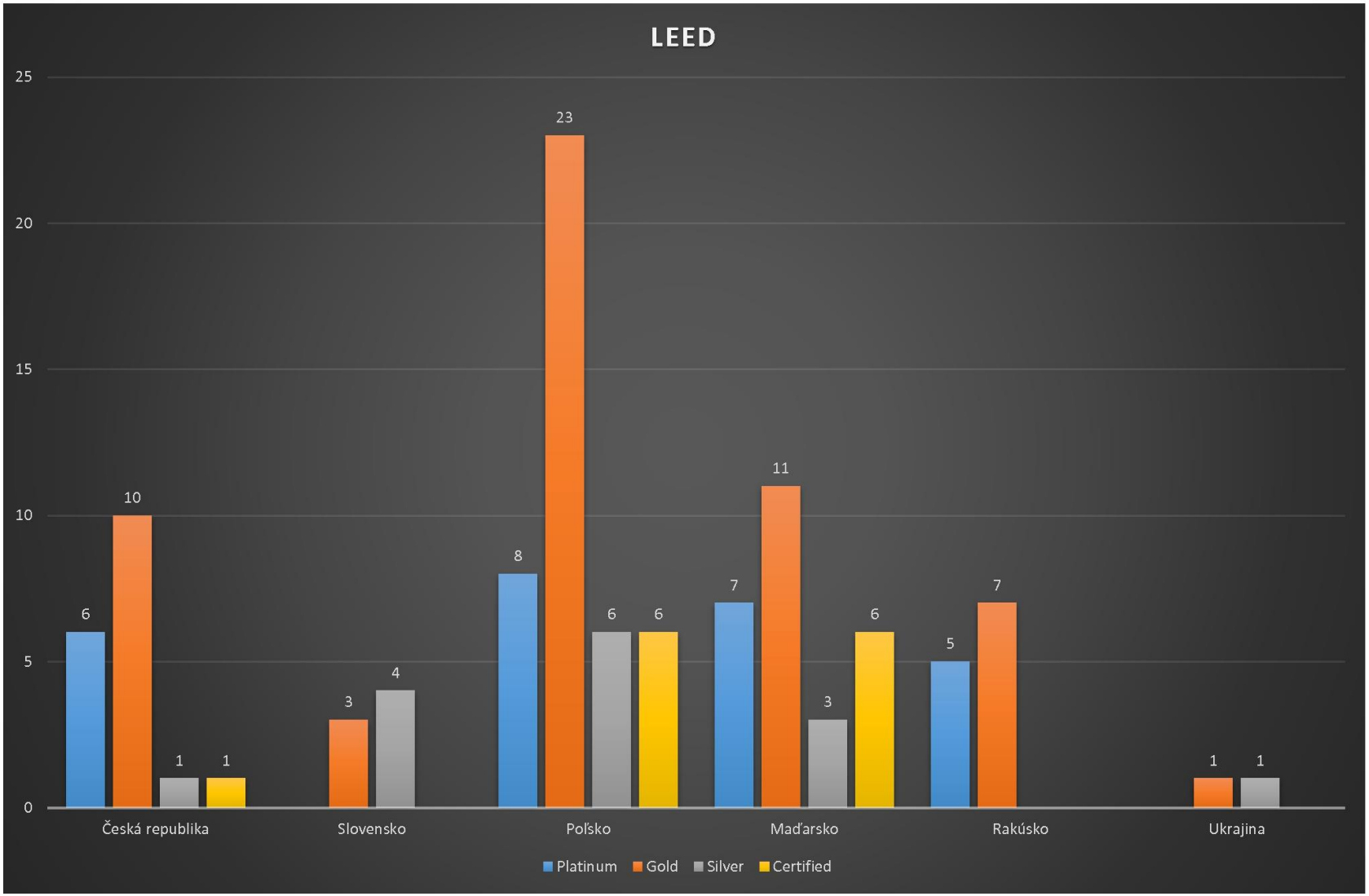


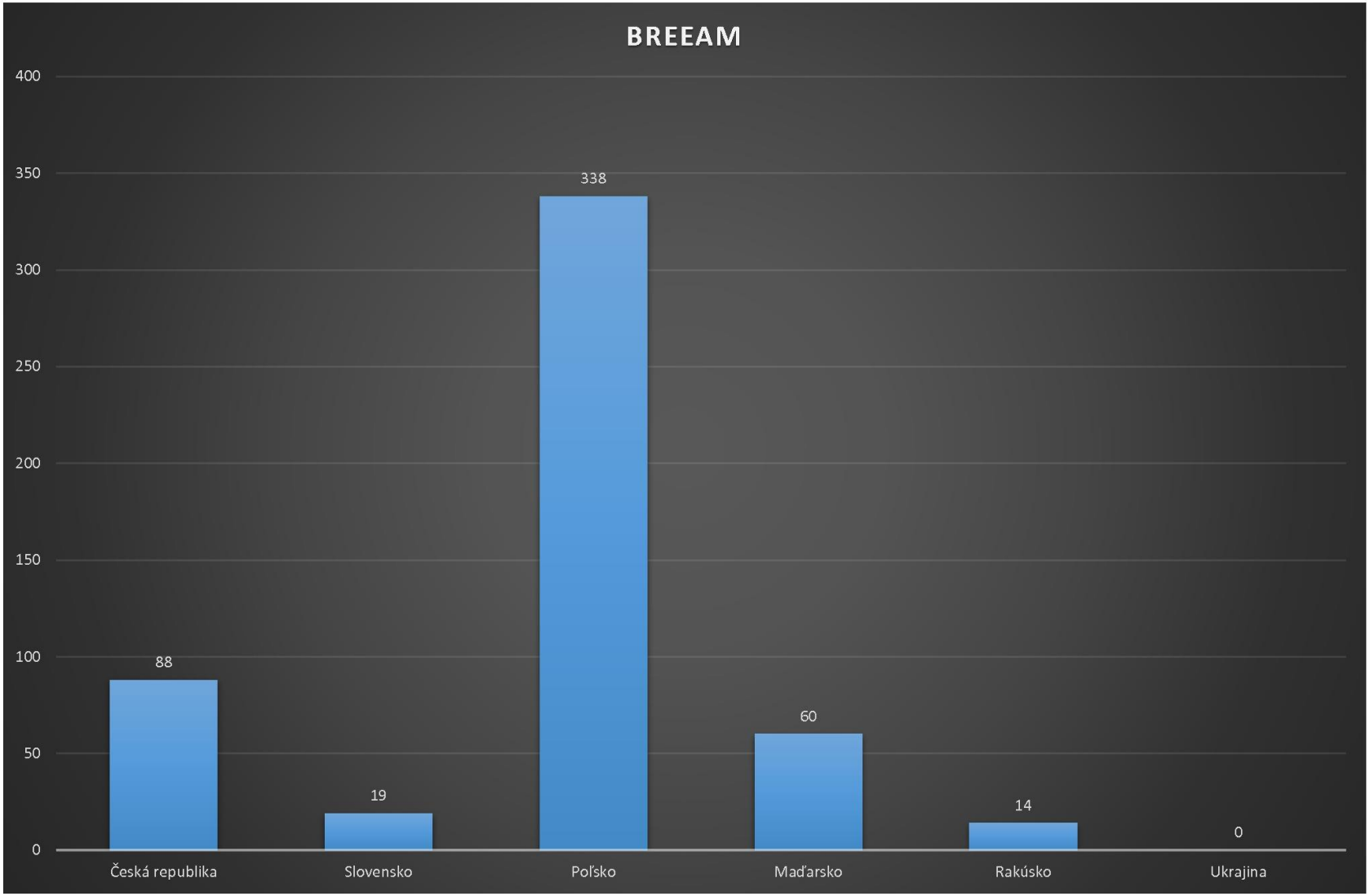
Brown discounts

- O cenovom prémiu za zelené budovy možno hovoriť vtedy ak dopyt po zelených budovách prevyšuje ponuku zelených budov, o zníženej hodnote hnedých budov možno hovoriť vtedy ak dopyt po zelených budovách presiahne dopyt po hnedých budovách. Na Slovensku možno hovoriť o zelených (a hnedých) budovách, na trhu, kt. prechádza z nízkej na vysokú orientáciu na udržateľnosť.

- Kým zvýšenie hodnoty zelených budov je často spochybňované, znížená hodnota hnedých budov na trhoch kde je vysoká orientácia na udržateľnosť je všeobecne prijímaná.


LEED
90
80
70
60
50
40
30
20
10
0
35
18
9
7
77
43
24
27
10
12
3
2
Česká republika
Slovensko
Poľsko
Maďarsko
Rakúsko
Ukrajina
Registrované
Certifikované


LEED
25
20
15
10
5
0
6
10
1
1
3
4
8
23
6
6
7
11
3
6
5
7
1
1
Česká republika
Slovensko
Poľsko
Maďarsko
Rakúsko
Ukrajina
Platinum
Gold
Silver
Certified


BREEAM
400
350
300
250
200
150
100
50
0
88
19
338
60
14
0
Česká republika
Slovensko
Poľsko
Maďarsko
Rakúsko
Ukrajina

Rozšírenosť cert. systémov

V súčasnosti je v Bratislave certifikovaných BREEAM alebo LEED 15% administratívnych budov, pričom registrovaných v jednom zo systémov je väčšina administratívnych budov vo fáze prípravy a vo výstavbe. "BRF: Trh kancelárskych priestorov 3.Q 2014" http://sklady.etrend.sk/poradna/brf-trh-kancelarskych-priestorov-3-q-2014

V ČR sa v minulom roku 81% budov vo výstavbe uchádzalo o jeden z certifikátov. "Praha má více „zelených" kanceláří než činí evropský průměr" http://www.skypaper.cz/novinky/praha-ma-vice-zelenych-kancelari-nez-cini-evropsky-prumer/

Risk management

1. **Riziko normalizácie** - Zníženie rizika straty hodnoty budovy vzhľadom k meniacim sa normám. Možnosť vyhnúť sa potrebe modernizácia v neskoršej fáze životného cyklu budovy. Možnosť, že legislatíva prinesie povinnosť zverejňovať spotreby budovy, čo môže predstavovať nevýhodu na trhu oproti novším budovám. Normy sú zamerané na nové budovy. Nové budovy budú preto dosahovať lepšie parametre a staršie budovy sa budú zákonite dostávať do nevýhody.

2. **Riziko straty obsadenosti** – Slovenský trh prechádza z nízkej na vysokú mieru orientácie na udržateľnosť. Potom, ako sa stane certifikácia hlavným prúdom, bude klesať ochota nájomcov obývať necertifikované budovy.

3. **Riziko straty hodnoty** – S rastúcim podielom zelených budov vzniká riziko tzv. "brown discounts". Toto riziko vzhľadom k zvyšovaniu orientácie na udržateľnosť rastie a môže negatívne ovplyvniť hodnotu budovy počas investičného horizontu a pri exite.

4. **Riziko získavania investícií** – spoločnosti s portfóliom zelených budov sú schopné vyjednať lepšie podmienky pri financovaní. Udržateľné portfólio láka investorov a vysiela signál stability a dôveryhodnosti.

5. **Fyzická hrozba** – Hrozba poškodenia budovy počas jej životného cyklu z hľadiska meniacich sa klimatických podmienok. Riziko potopy, zmeny v poveternostných podmienkach a vzorcoch zrážok. Kľúčová bude "poistiteľnosť" budov. Poistovne budú opatrnejšie pri výbere a stanovovaní ceny poistenia. Udržateľné budovy sa môžu dostať do výhody.

We love making green and energy efficient buildings

http://www.edome.sk

Thank you for your attention

FREE ENERGY LIVING

e-dome
free energy living