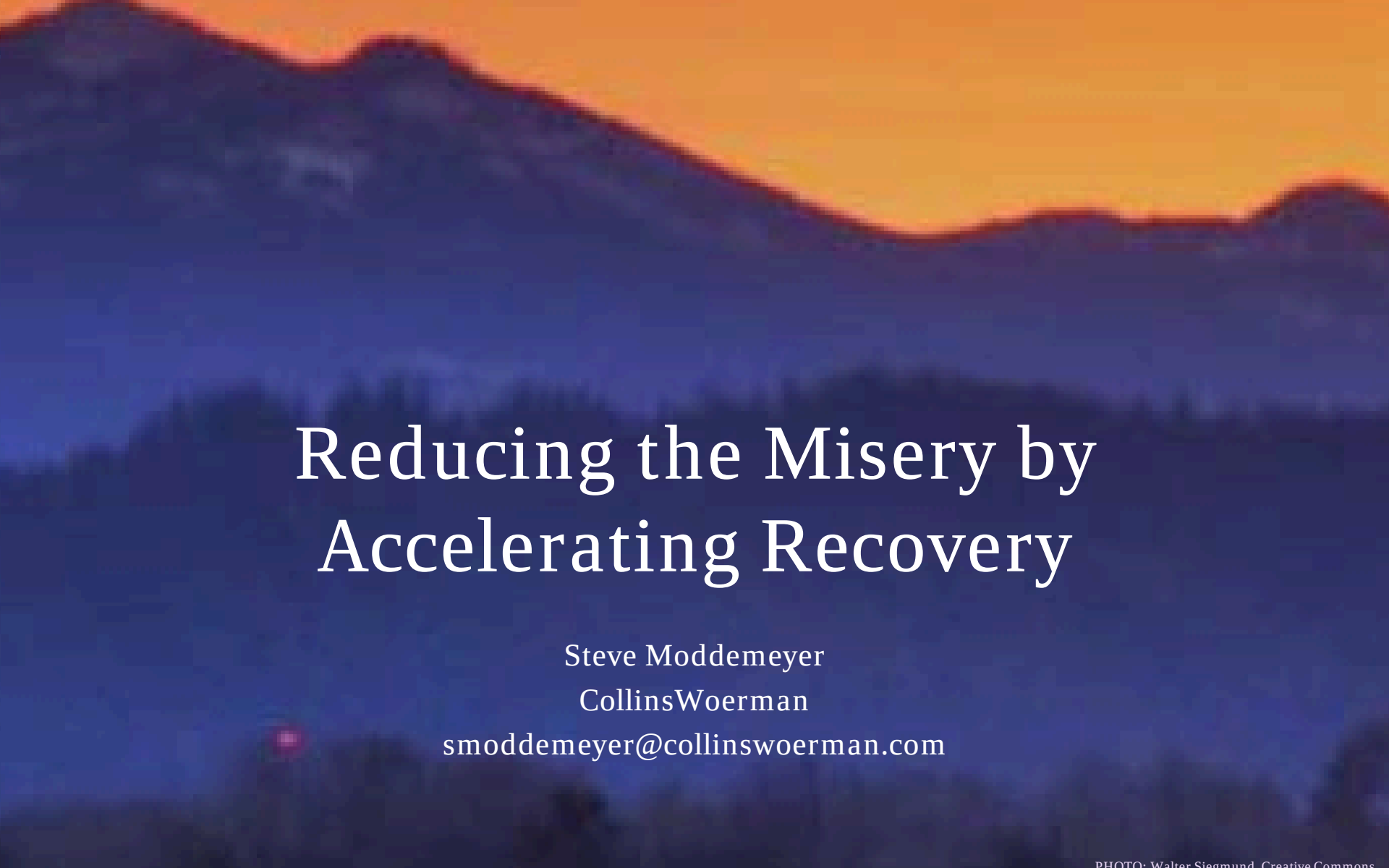


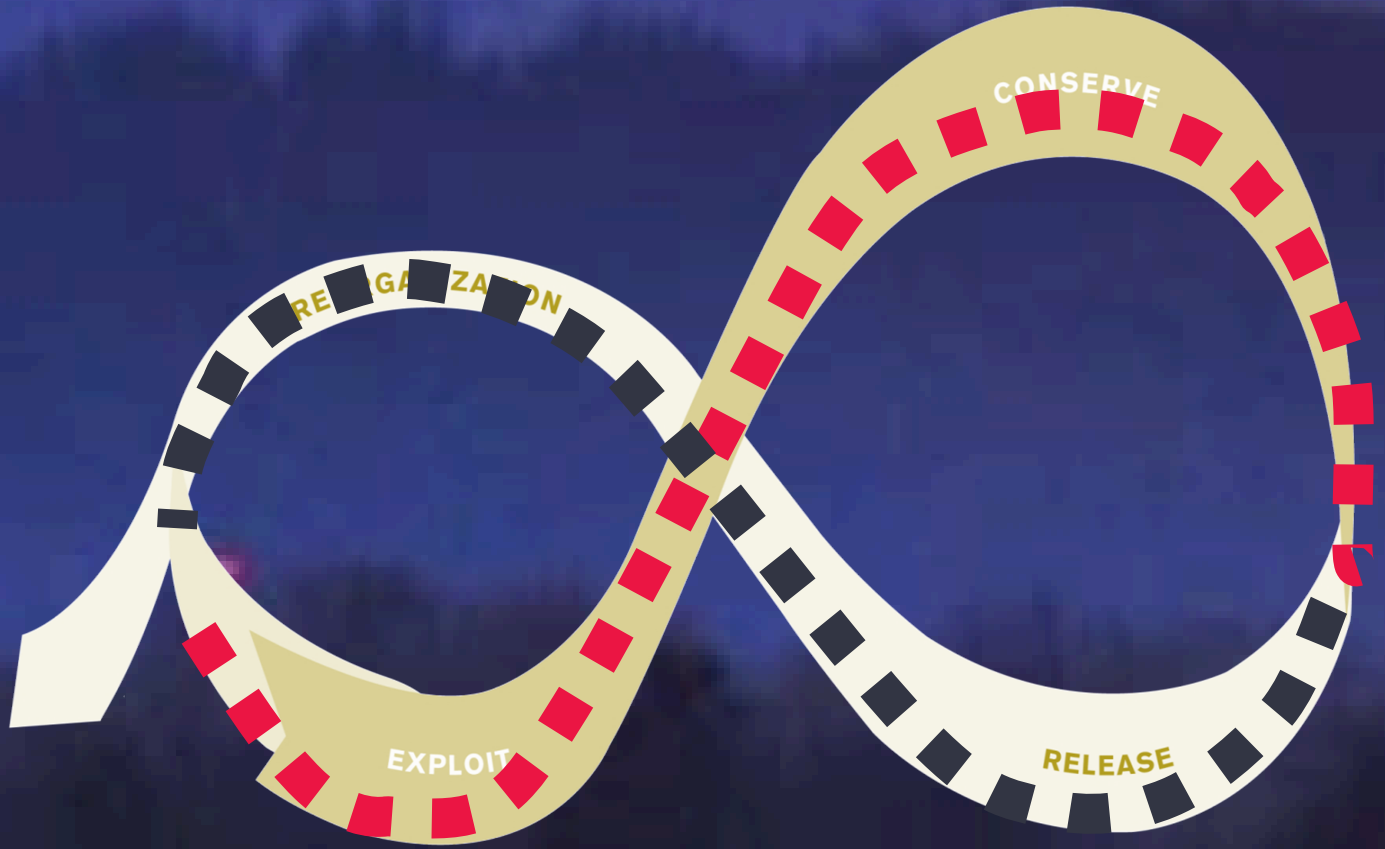
Reducing the Misery by Accelerating Recovery

Steve Moddemeyer
CollinsWoerman
smoddemeyer@collinswoerman.com

PHOTO: Walter Siegmund, Creative Commons

SOCIO-ECOLOGICAL RESILIENCE:

It’s not the likelihood that infrastructure is going to fail – its how long does it take to recover once it does fail?



(Holling, 1986)

Adaptive Cycle

(Holling, 1986)

NIST Special Publication 1190

Community Resilience Planning Guide for Buildings and Infrastructure Systems

Volume I

DIFFERENCE FROM TRADITIONAL ENGINEERED RESILIENCE PLANNING

1. Uses *time-to-recovery*
2. Accounts for increased *variability from climate change*
3. Reveals *interdependencies* between infrastructure systems
4. Reflects the *nexus between built and natural systems*
5. Identifies *community-based priorities*
6. Avoids “*scale blindness*”
7. Rewards *flexibility and adaptability*
8. Incorporates *social equity* and *capacity to adapt*


Resilient Design
Performance Standard
for Infrastructure and
Dependent Facilities

RESILIENT DESIGN PERFORMANCE STANDARD
Score Sheet

BOULDER COUNTY INDICATOR	POINTS	ENTER SCORE	DESCRIPTION
1. Co-Benefits. Provide solutions that address problems across multiple sectors creating maximum benefit.			
Indicator 1.1. Apply a business case format that includes consideration of alternatives and robust analysis of those alternatives across the triple bottom line of economics, community, and the environment.	Required	Required	Prepare a business case that takes an analytical look at the project element alternatives, the costs, and the return on investment both in terms of the economy and in value creation to the community and the environment.
Indicator 1.2. Use multi-disciplinary design team to develop and consider a range of integrated solutions that provide enhanced value across the triple bottom line.	2		Document the project design charrette process, integrated design team in Business Case.
2. High Risk and Vulnerability. Ensure that strategies directly address the reduction of risk to human well-being, physical infrastructure, and natural systems.			
Indicator 2.1. Satisfy the time-to-recovery performance goal.	Required	Required	Refer to Time-to-Recovery Performance Goals Matrix (Design team estimate the damage from hazard and the time-to-repair.) If the project cannot meet the performance goals, then the project team must develop temporary work-arounds or programmatic strategies to meet the required Operational time-to-performance goal.
Indicator 2.2. Identify gaps and find solutions for moving forward.	Required	Required	Provide business case that documents consideration and analysis of alternatives considered for the project. (Can include temporary repairs to meet the minimal or operational phase.)
Indicator 2.3. Consider project alternatives that augment ...se buffers from high risk locations ...urban wildfire	Required	Required	...have the potential for economic benefit to the investor and the broader community bo... ...analysis in the Business Case that quantifies ...impacts of the project.

cator 7.6. Consider if project can acity of reserves at each scale so isolated elemen n survive for a period on their own.		Semi-autonomou correct given new insight and in command and control and are the source of novel adaptations to variability. This innovation provides incr capability for all systems to adapt to fast and slow change. Apply the consideration of semi-autonomous systems in the project design process and document results in the Business Case.
Indicator 7.7. Evaluate potential of creating semi-autonomous systems at the building, neighborhood, and district scale.	1	
8. Harmonize with existing activity. Expand, enhance, or leverage work being done to build on existing efforts. Assure outcomes that are environmentally friendly, sustainable, and complementary to the natural setting		
Indicator 8.1. Identify project design solutions that leverage and enhance the function of existing natural, social, and infrastructure systems.	2	A project that can provide multiple benefits to community will be more highly ranked than one that only serves a single purpose. Reviewing existing plans can identify opportunities for mutual support. Cost effectiveness can increase if multiple objectives can create synergies.
9. Long Term Lasting Impact. Create long term gains to the community with solutions that are replicable and sustainable, creating benefits for present and future generations.		
Indicator 9.1. Account for value of benefit to future generations when identifying preferred project designs.	2	To better reflect the multi-generational investments OMB Circular A-4 recommends applying a 1% discount rate in the economic analysis for future generations, 3% for a consumption perspective, and 7% discount rates to model an investment perspective. Document findings in the Business Case.
Total Possible Points	**23**	**0** **Project TOTAL**
In meeting or exceeding the resilience performance standard of 18 points the project is contributing towards resilience by meeting the Time-to-Recovery goal		

line at bccollaborative.org/infrastructure-policies.html

What *The Standard* can do…

Leverage every capital project as an opportunity to incrementally move Boulder County towards a more resilient future.

RESILIENT ST. VRAIN!
RESTORE & REVITALIZE
Your Dollars in Action

ATTRIBUTES OF SOCIO-ECOLOGICAL RESILIENCE

- Diversity
- Modularity
- Connectivity
- Storage
- Feedback
- Story
- Trust
- Self-Organizing

Image: USGS

Thank You!

Steve Moddemeyer
Principal
CollinsWoerman
smoddemeyer@collinswoerman.com

National Disaster Recovery Framework