



WELCOME!

Lean and the Learning Organization

Thursday, November 15, 2012

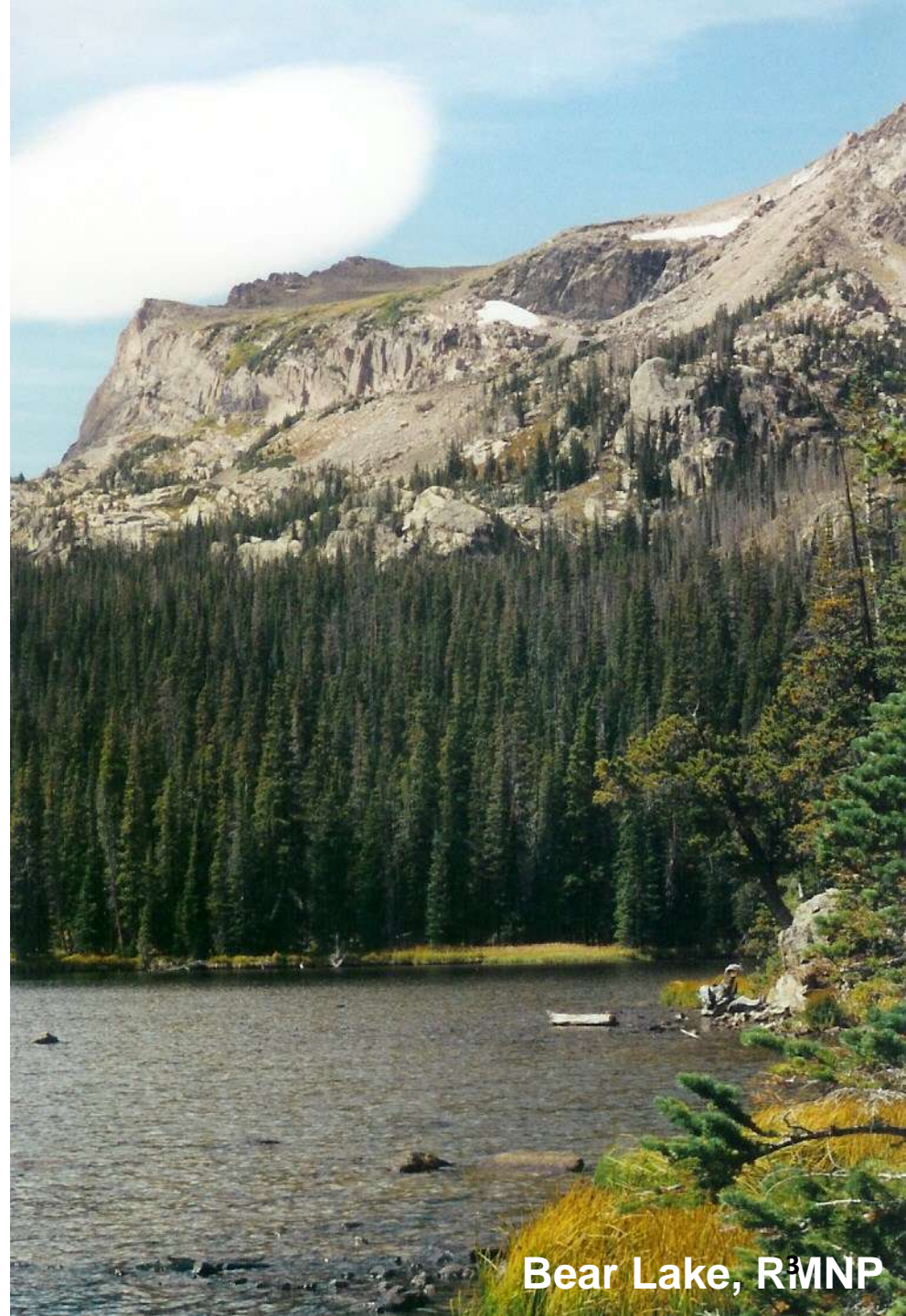
First things first: safety

Colorado National Monument



What was advertised, briefly

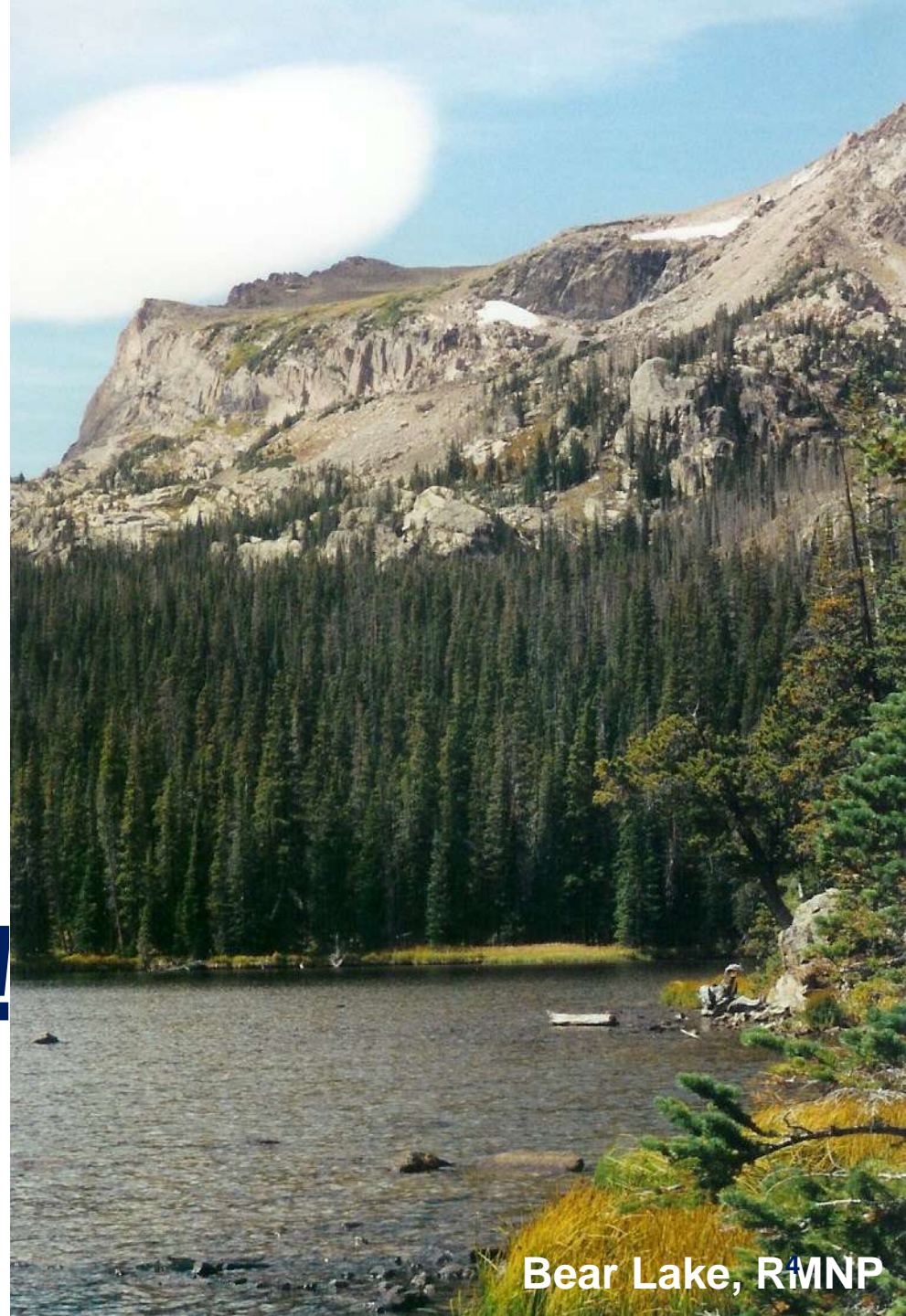
Our business world is marked by ever-increasing competition, major technological advances, and shifting customer expectations and preferences. Consequently, it is becoming even more crucial that our organizations evolve from just "running the business" organizations to "learning organizations". Within a learning organization, everyone continually creates, acquires, and transfers knowledge - and then uses that knowledge to create an improved organization. So, how do we do this? And, why do so few organizations evolve into learning organizations? Our old friend, Lean, holds the key. Come to the November Section meeting for a robust discussion about "Lean and the Learning Organization!"



Bear Lake, Rim NP

**What was
advertised**

**Using Lean
to become a
Learning
Organization!**



Bear Lake, RMNP

The Learning Organization is ...

“...where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.”

– Peter Senge, *The Fifth Discipline*



Tools: Your Key Takeaways

Lean and the Learning Organization

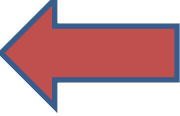
Thursday, November 15, 2012



My learning objective(s): _____

... In support of this (these) organizational goal(s): _____

My key takeaways and action items	What I am going to do with this, and by when	People I need to involve
1.		
2.		
3.		

1. Your learning objectives 
2. Key points you agree with
3. Key points you *don't* agree with
4. What are **YOU** going to do back at your work, starting tomorrow

Your expectations?





And, of course, the Customer Pledge

View west from Cripple Creek⁸

How about quick warm-up



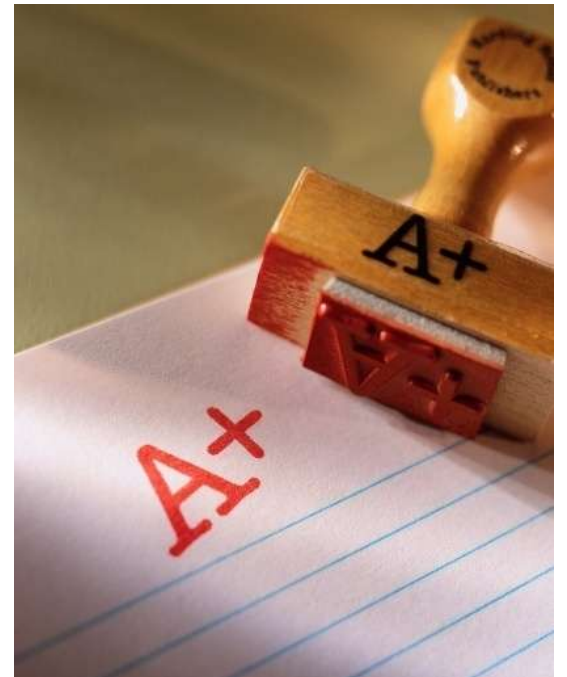
Are you good working
together with others?

$$5 \div 2 = 3 \frac{1}{4}$$

You learned that Math is important for the work of folks who belong to ASQ, right?

3.14 300,000

**Then, let's start with a
quick test that combines
both ...**



Instructions:

Add the numbers on the flipchart, collectively, and call out the resulting answer ...

1000

1000
40

1000

40

1000

1000

40

1000

30

1000

40

1000

30

1000

1000

40

1000

30

1000

20

1000

40

1000

30

1000

20

1000

1000

40

1000

30

1000

20

1000

10

Hmmmmmmmm
.....

The “Best” Answer (in Base 10):

1000

40

1000

30

1000

20

1000

10

4100

**Participant
Question:**

**What
happened?**



**“Mistakes”
are
inevitable**

**Learning is
crucial**





Lean and the Learning Organization

Thursday, November 15, 2012

Learning organization: one approach

Individual possessing valuable knowledge and skills prescribe what is to be done

Learning is not imposed but acquired or shared through informal oftentimes subconscious means

informal



dissemination mode

role model

community of practice

authorized expert

hierarchical bureaucracy

formal

Knowledge developed over time that applies to everyone is documented and subsequently applied in order to pass on instructions or to avoid mistakes

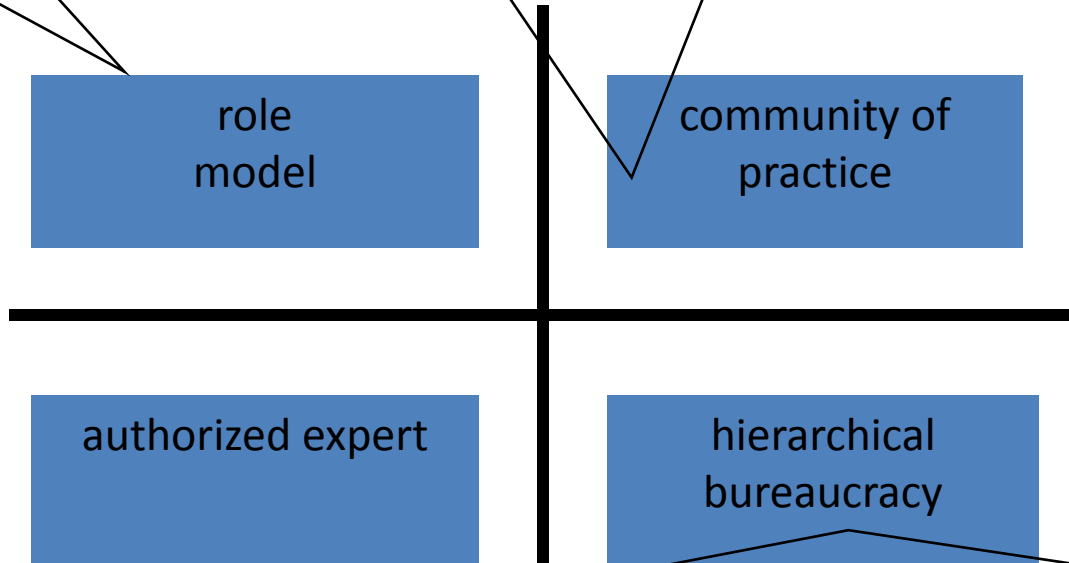
personal



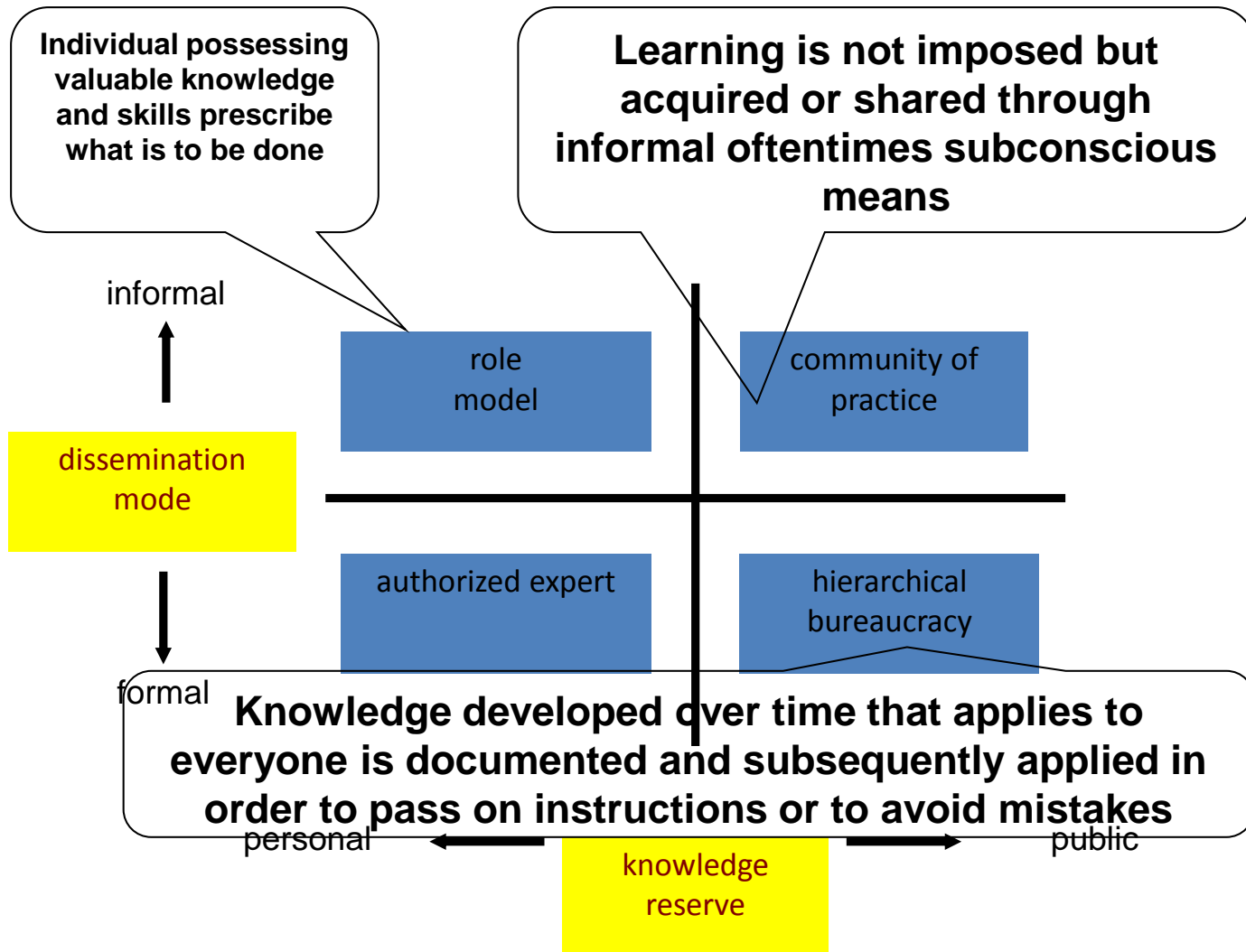
knowledge reserve



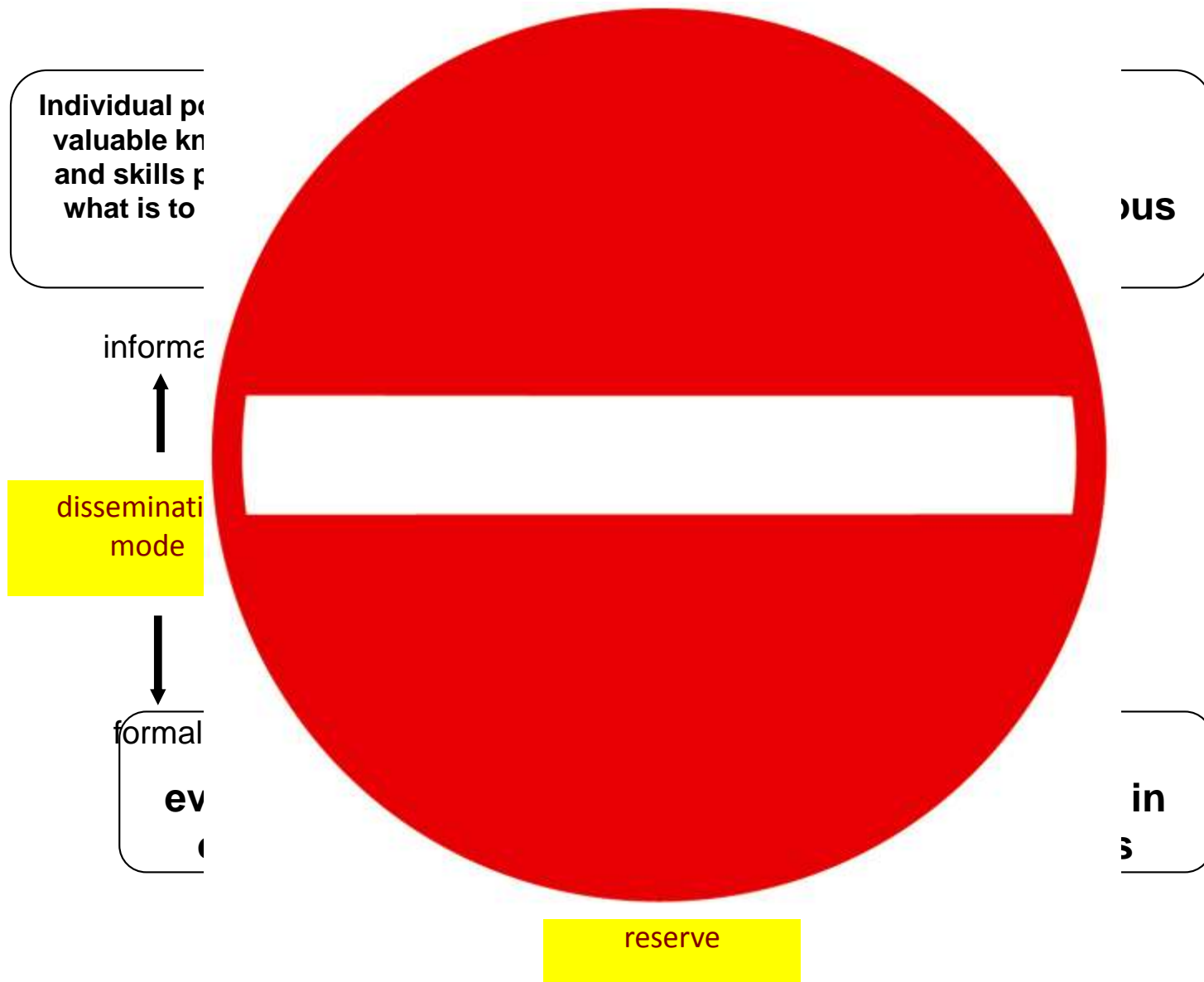
public



Learning organization: one approach



Learning organization: one approach



**So, what WILL we be talking about,
Gary?**

Tools, to lead to the Learning Organization

What is a Tool?

This is Tool



However, we will NOT be talking about them

Tool

**A device or
implement used to
carry out a particular
function**

Tool

A device or implement used to carry out a particular function

Our function tonight is the Learning Organization

And, why even bother?

**Why do we need to become a Learning
Organization**

The Learning Organization is ...

“...where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together.”

– Peter Senge, *The Fifth Discipline*



So, do we have the motivation to become that Learning Organization?

Tool 0:

Motivation

At CDOT

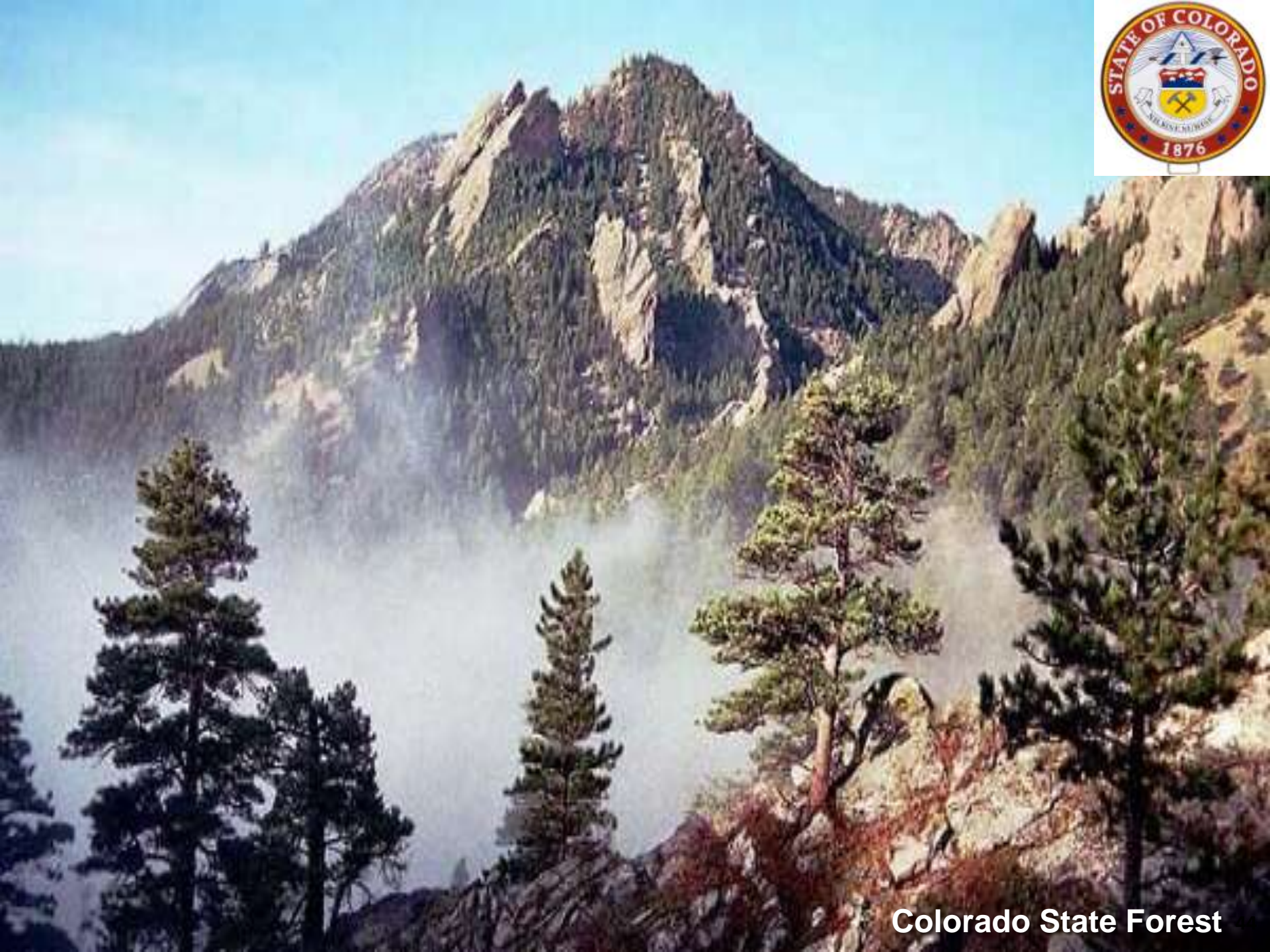
A (very) little bit about



- 25,775 employees in the Executive Branch
 - *Excluding another 53,114 at state colleges and universities, and 4,583 in the Judicial and Legislative branches*
- 20 Departments and Offices
- \$20 Billion annual budget
- 104,094 square mile service territory
- 5,116,796 primary customers, and many more occasional visiting customers
- Very diverse products and services
 - Agriculture, education, elections, prisons, human services, public health, state patrol, highways, state parks, and many others



Ironwood prison and solar array 43



Colorado State Forest

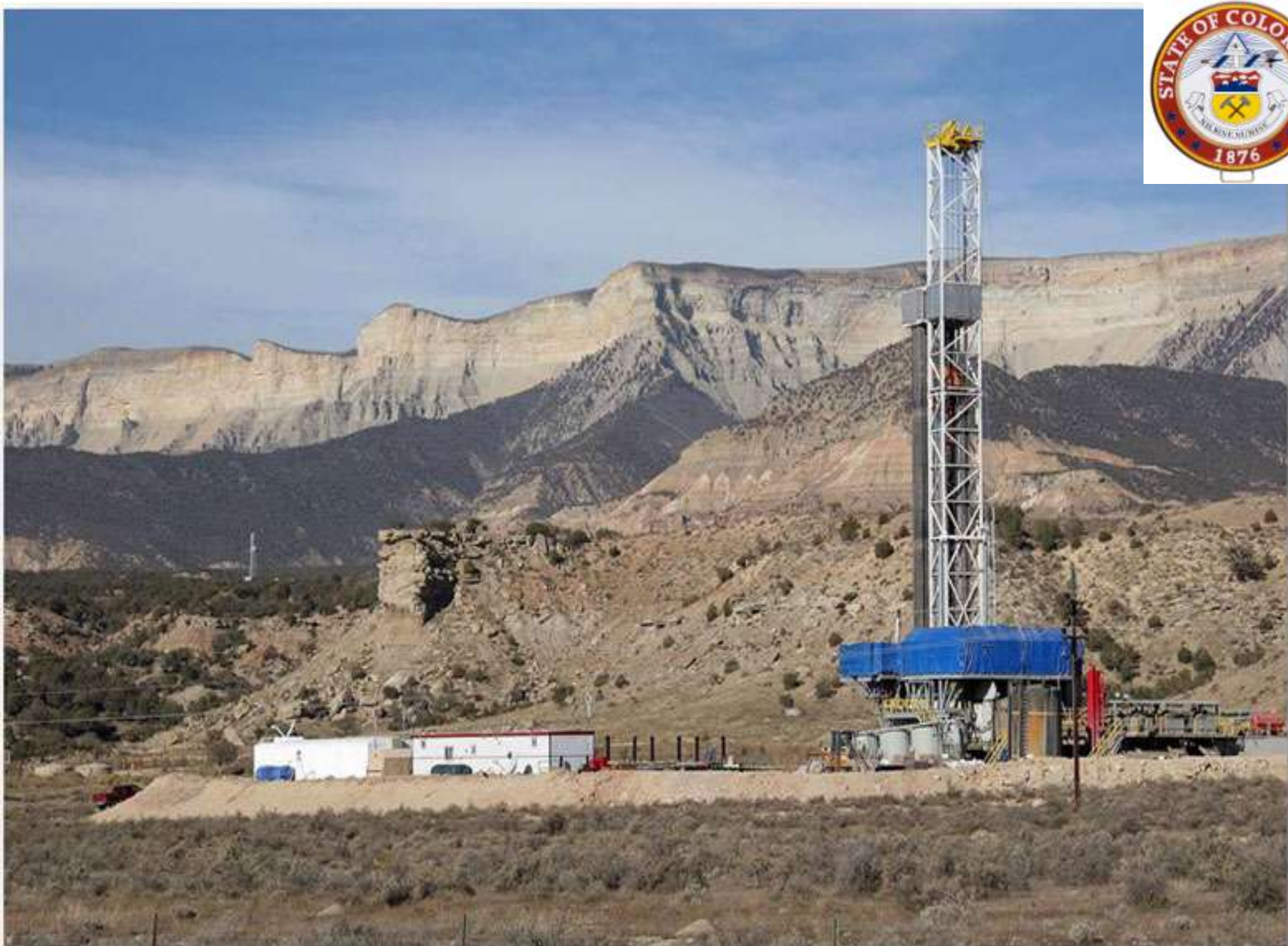


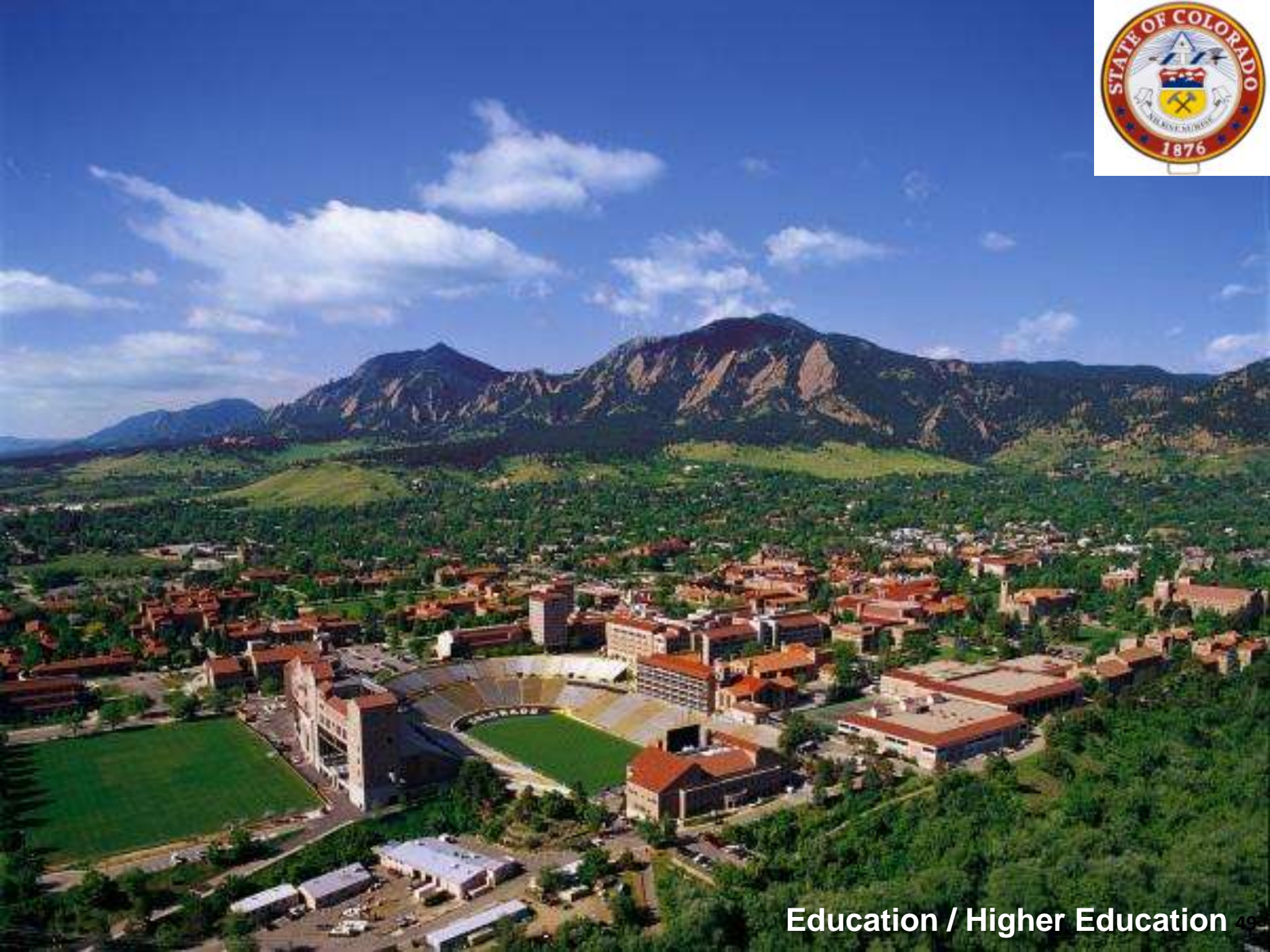
Colorado election polling booths⁴⁵



Air quality in Denver: montage









Taking care to get you there



Berthoud Pass

A (very) little bit about



5 key priorities for 2012:

- 1. Protect the Vulnerable**
- 2. Economic Development**
- 3. Education Reform**
- 4. Modernizing Government**
- 5. Long-term Budget Planning**

A (very) little bit about

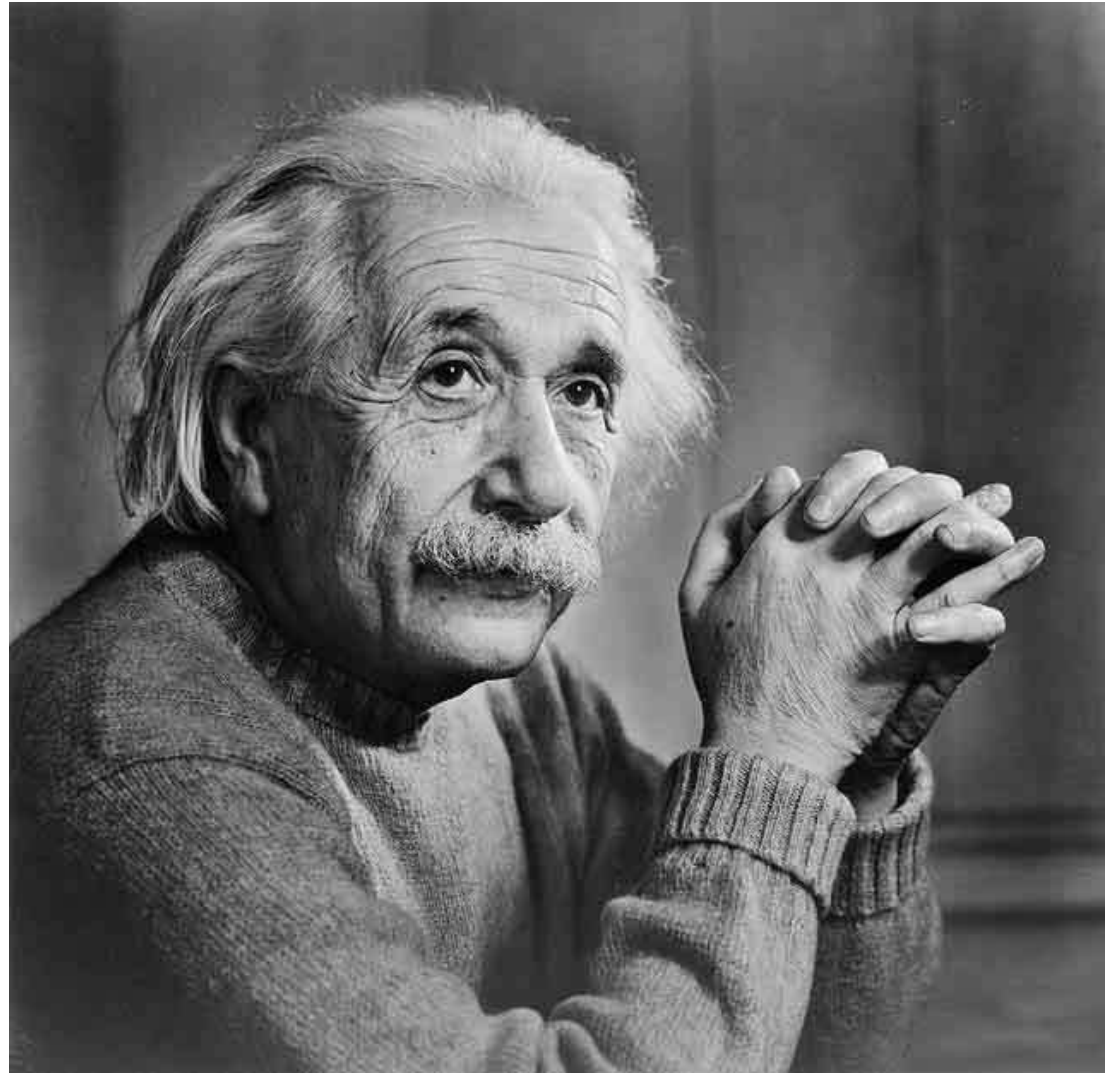


5 key priorities for 2012:

- 1. Protect the Vulnerable**
- 2. Economic Development**
- 3. Education Reform**
- 4. Modernizing Government** ←
- 5. Long-term Budget Planning**

***“The
significant
problems we
face cannot be
solved at the
same level of
thinking we
were at when
we created
them.”***

– Dr. Albert Einstein



The number-one problem facing government is **capacity**.

Simply put, we don't have enough resources to keep up with ever-expanding and ever-more complex workload, **UNLESS** we do something different.

Capacity and related issues for:



CDOT Thumbnail Sketch

Maintain and Keep Transportation Safe

- **23,000** lane-miles of Interstate and State highway system
- **3,400** bridges
- Routine maintenance
- Bridge repair and resurfacing
- Snow removal
- Safety improvements



Get More Out of the System

- Traveler information
- Ramp metering
- Signal synchronization
- Express toll lanes on I-25



Distribute Funding to Local Governments

- Aviation grants
- Federal funds to Metropolitan Planning Organizations
- Grants to local governments
- Transit improvements





23,000 lane-miles

Funding the Colorado Transportation System: Sources (Highways)

FY 2011

State

\$681.0 MM


**Vehicle
Registration Fees**

+

State tax 22¢/gal
Federal tax 18¢/gal
Gasoline

+



**Other Fees
& Tickets**

Federal
\$541.0 MM



Off the
Top
12.7%

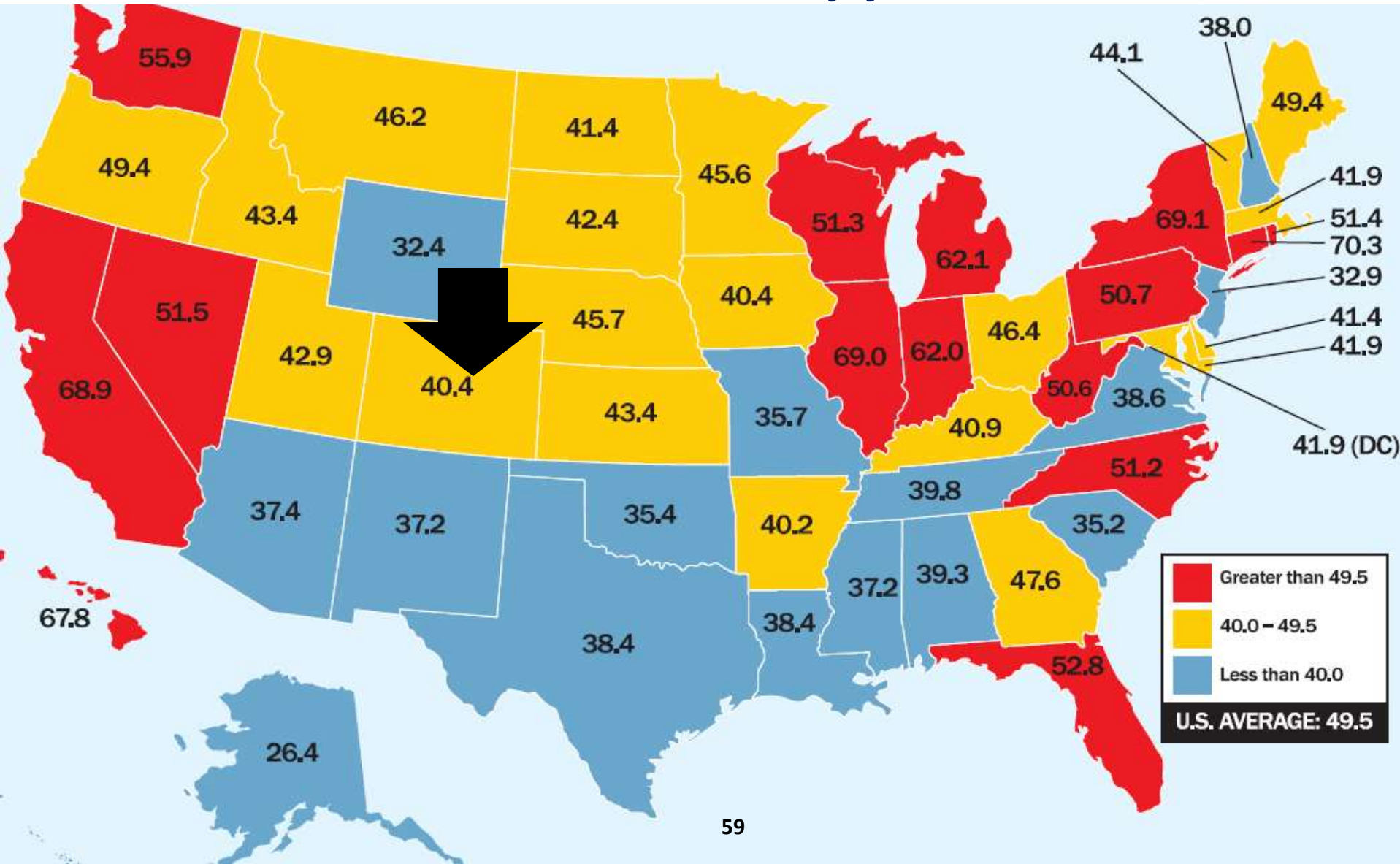


**State
Highway
Fund
53.9%**

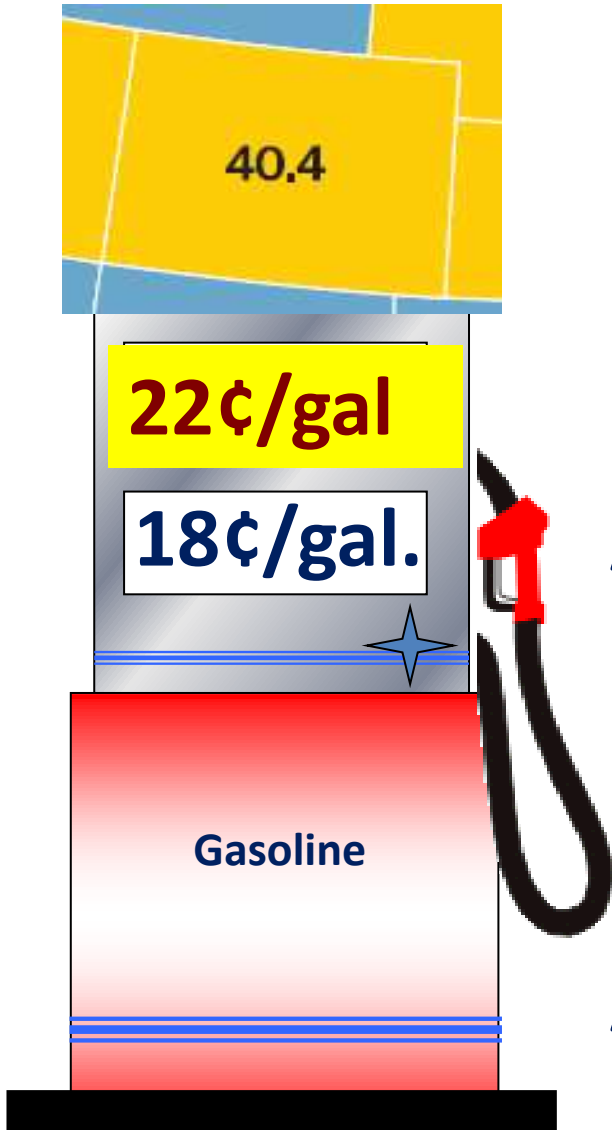
**Counties
19.8%**

**Local
Govt's
13.6%**

Total gas tax (state and federal): **40.4 cents** - Colorado ranks **34th** out of 51, and with no General Fund revenues – no increases for many years



Funding the Transportation System: Doing the Math

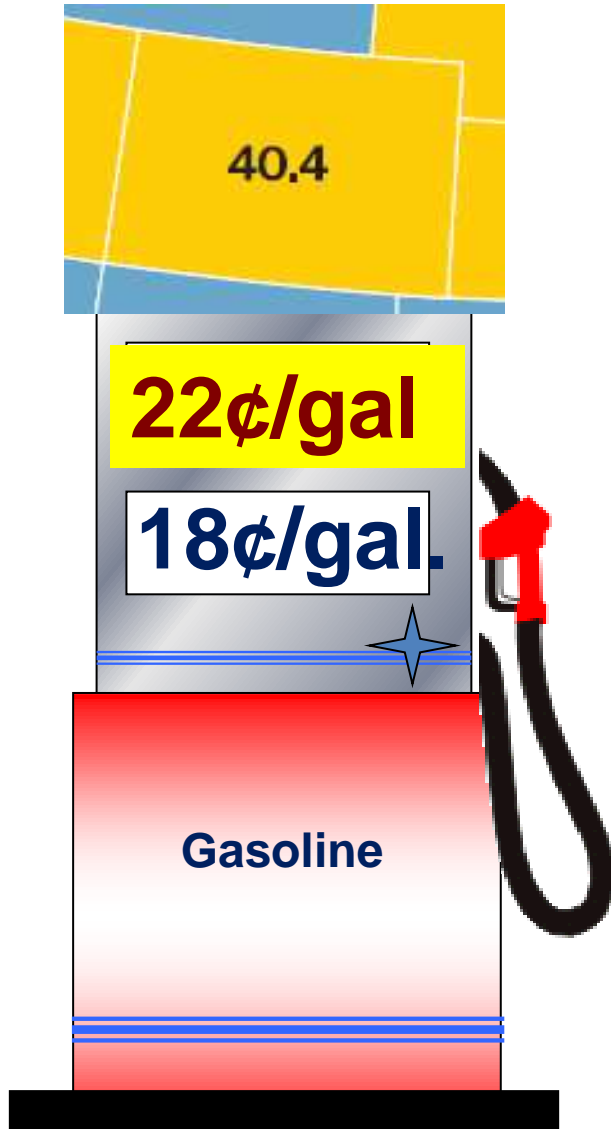


Most cars on U.S. highways average between 20 MPG and 40 MPG

At 20 MPG: **2.02 cents** of state and federal gas tax per mile in Colorado

At 40 MPG: **1.01 Cents** per mile

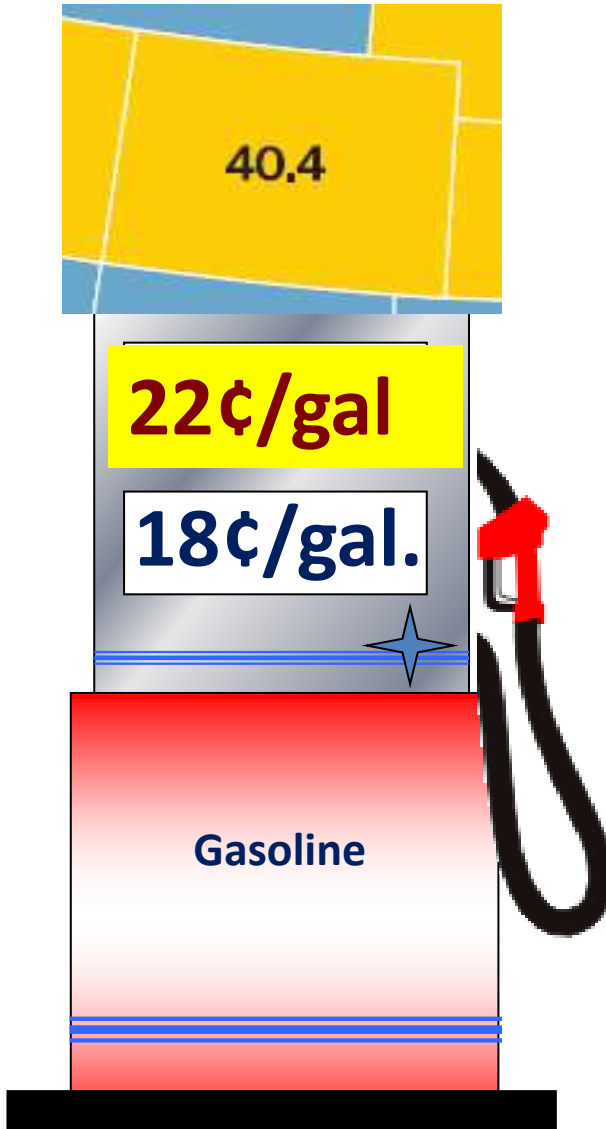
Funding the Transportation System: Comparisons



Colorado: 1 to 2 cents / mile

- Kansas turnpike: **2.3** cents
- NY throughway: **3** cents
- Indiana Toll Road: **3** cents
- Ohio turnpike: **4.2** cents
- Maine turnpike: **4.7** cents
- Illinois turnpike: **6** cents
- Florida turnpike: **7.5** cents
- New Jersey turnpike: **7.7** cents
- Pennsylvania turnpike: **8.5** cents
- Massachusetts turnpike: **8.5** cents
- *E-470*: **33** cents
- Delaware turnpike: **37.5** cents
- *Pikes Peak toll road*: **53** cents

Funding the Transportation System: Doing the Math



The average American car is driven **12,500 miles per year**

At 20 MPG, that is about **\$250** per year per driver in gasoline taxes (in Colorado)

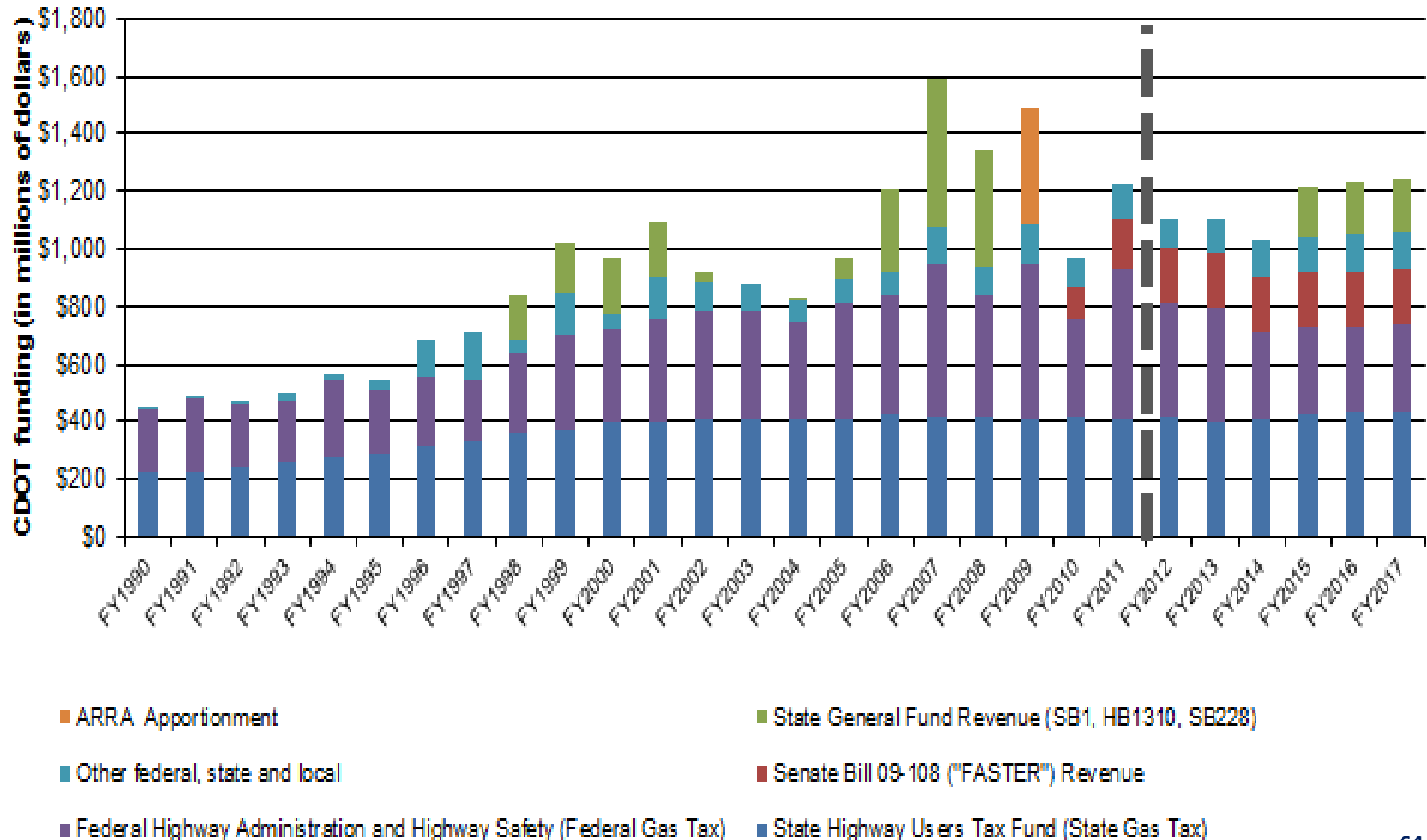
At 40 MPG, that is only **\$125** per year

Funding: These Highway Users Currently Pay Zero Gas Tax



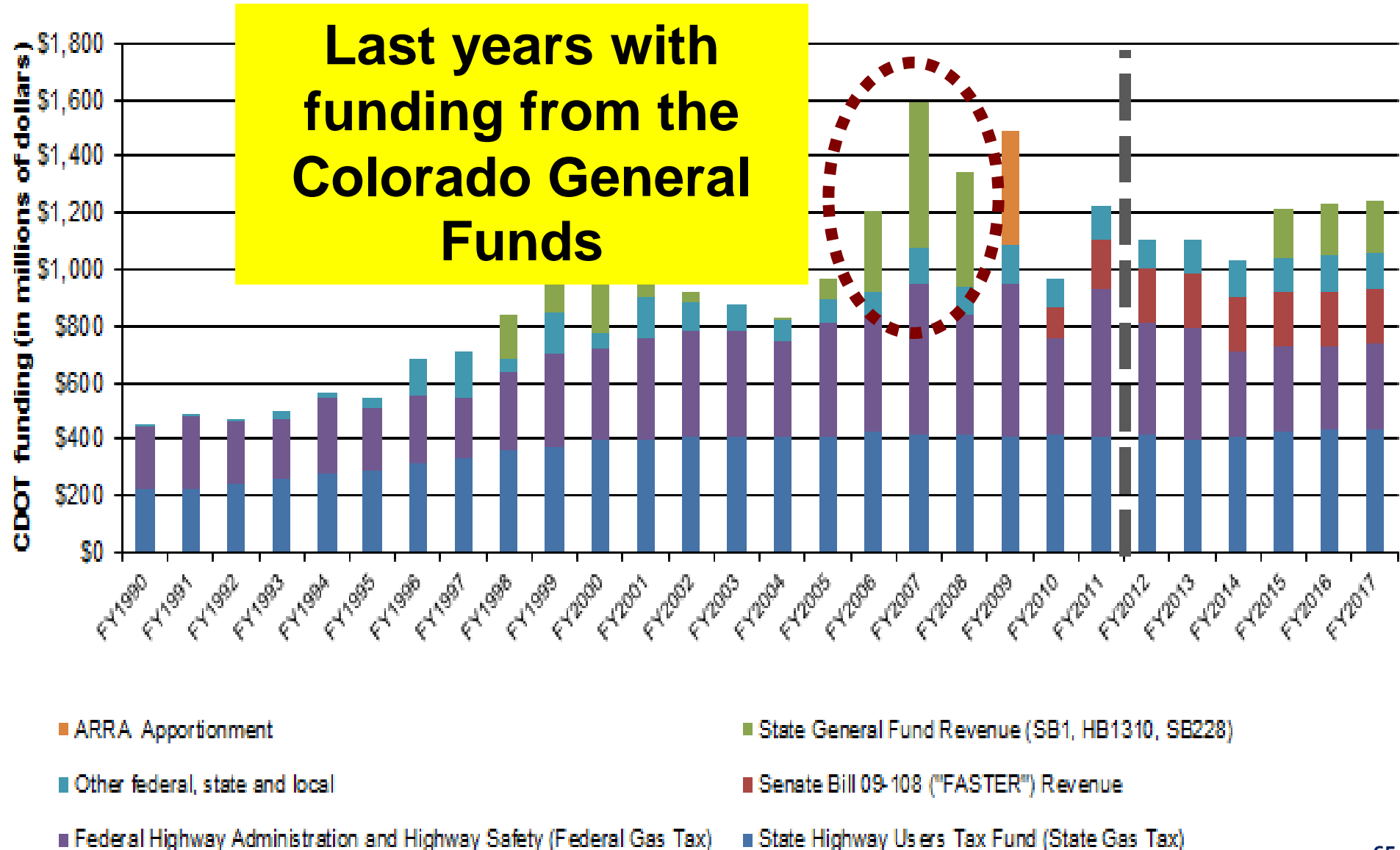
CDOT Funding: *Year-to-Year, without inflation effects*

CDOT Funding Sources by Fiscal Year, Actual 1990-2011 and Projected 2012-2017



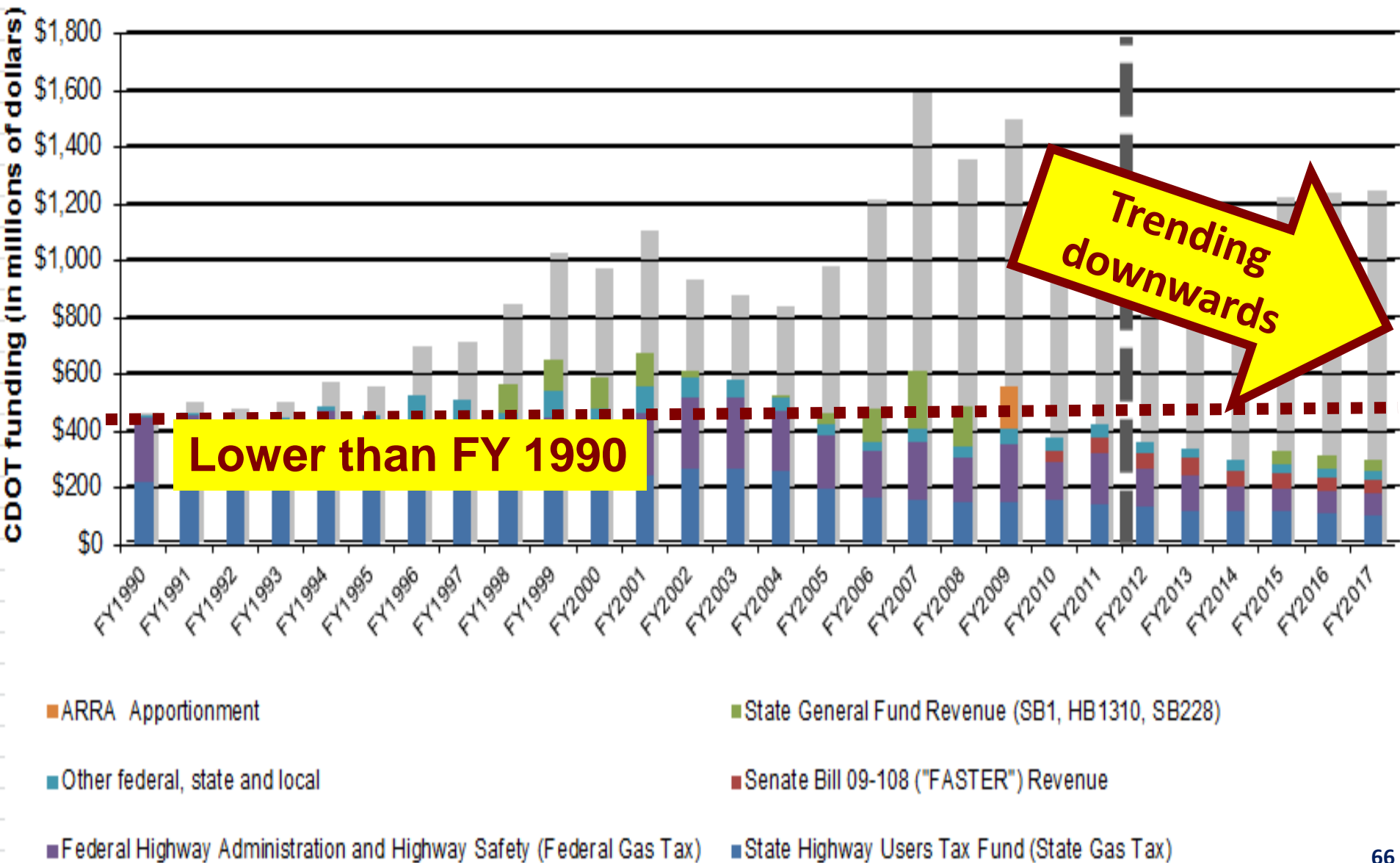
Funding: *Year-to-Year, without inflation effects*

CDOT Funding Sources by Fiscal Year, Actual 1990-2011 and Projected 2012-2017

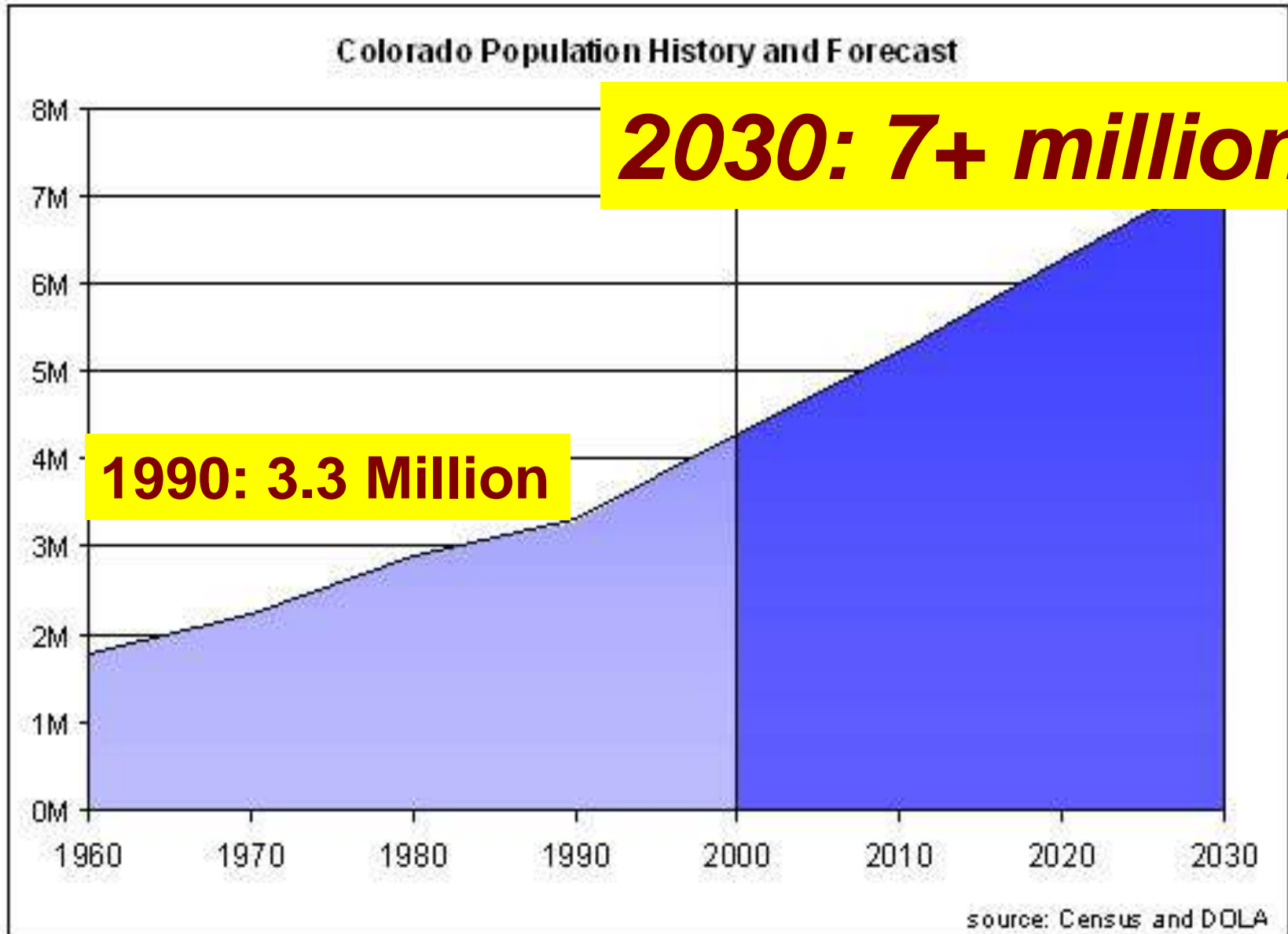


Funding: *Inflation adjusted to 1990 dollars*

Inflation-adjusted CDOT Funding Sources by Fiscal Year, Actual 1990-2011 and Projected 2012-2017
Revenues Deflated by CDOT Colorado Construction Cost Index



Challenges and opportunities: Continued Population Growth



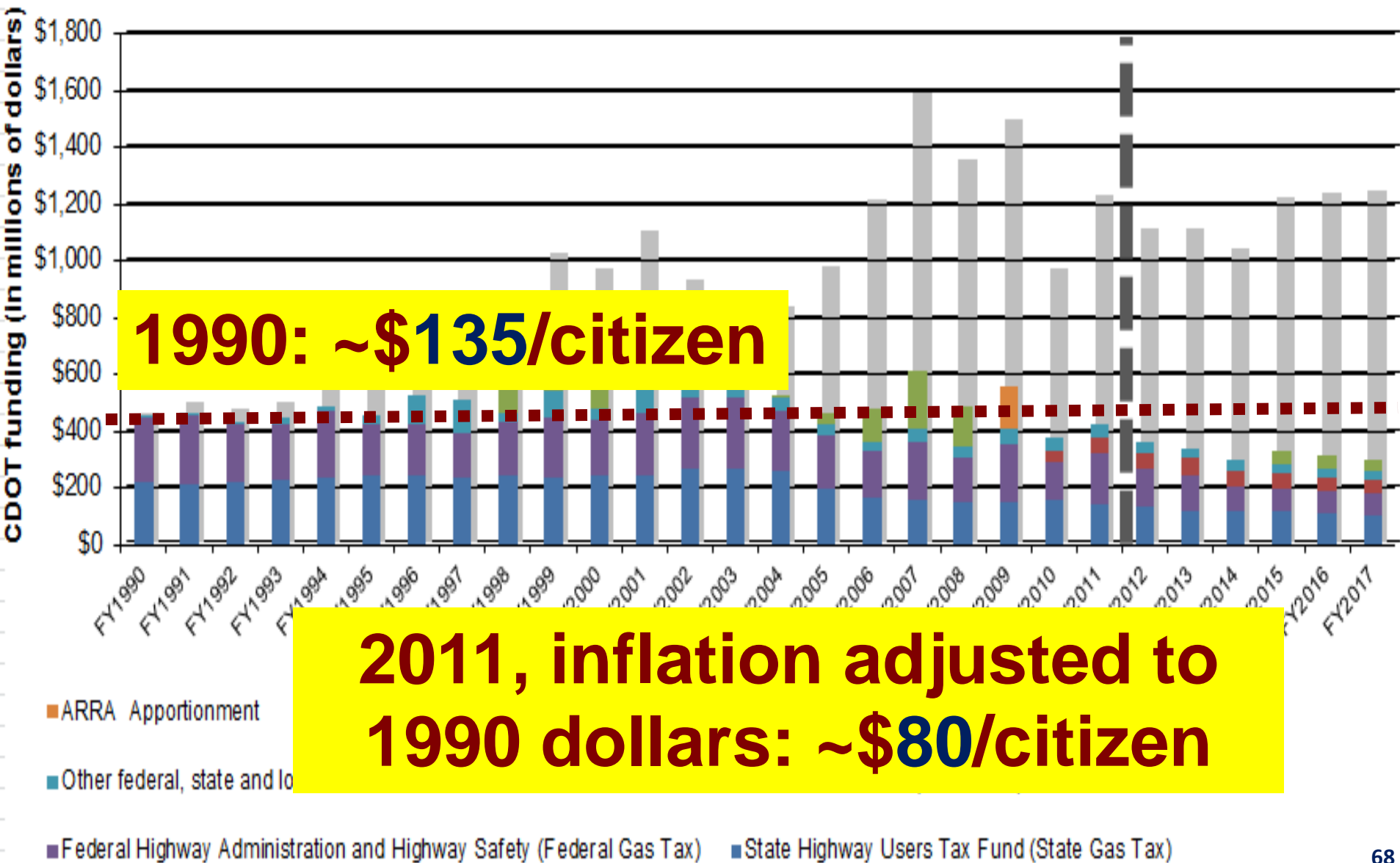
2030: 7+ million

1990: 3.3 Million

2010 Census: 5,029,196 residents

Funding: *Inflation adjusted to 1990 dollars*

Inflation-adjusted CDOT Funding Sources by Fiscal Year, Actual 1990-2011 and Projected 2012-2017
 Revenues Deflated by CDOT Colorado Construction Cost Index



Top Performance Measures: CDOT

	Transportation Commission Aspirational Goal	Fiscally Constrained Goal FY'11	Actual Performance FY '11
Fatalities per 100 Million Vehicle Miles Traveled	1.0	1.0	0.95
Percent of Pavement in Good or Fair Condition	60.0%	42.0%	48.0%
Percent of Bridge Deck Area in Good or Fair Condition	95.0%	94.8	94.5%
Overall Maintenance Level of Service (MLOS)	B	C+	B-
Minutes of Delay per Traveler in Congested State Highway Segments	22.0 min.	29.3	TBD*
Snow and Ice Control	A	B	B

*Data for 2011 is not yet available. The 2010 total delay was 17.3 minutes.

A photograph of a rocky riverbed in a canyon. The foreground is filled with large, dark rocks and a concrete barrier. In the background, a bridge spans across the canyon, and the surrounding hills are covered in sparse vegetation and patches of snow. The sky is overcast.

Big challenges for Colorado and CDOT!



Plenty of Motivation

The number-one problem facing government is **capacity**.

Simply put, we don't have enough resources to keep up with ever-expanding and ever-more complex workload, **UNLESS** we do something different.

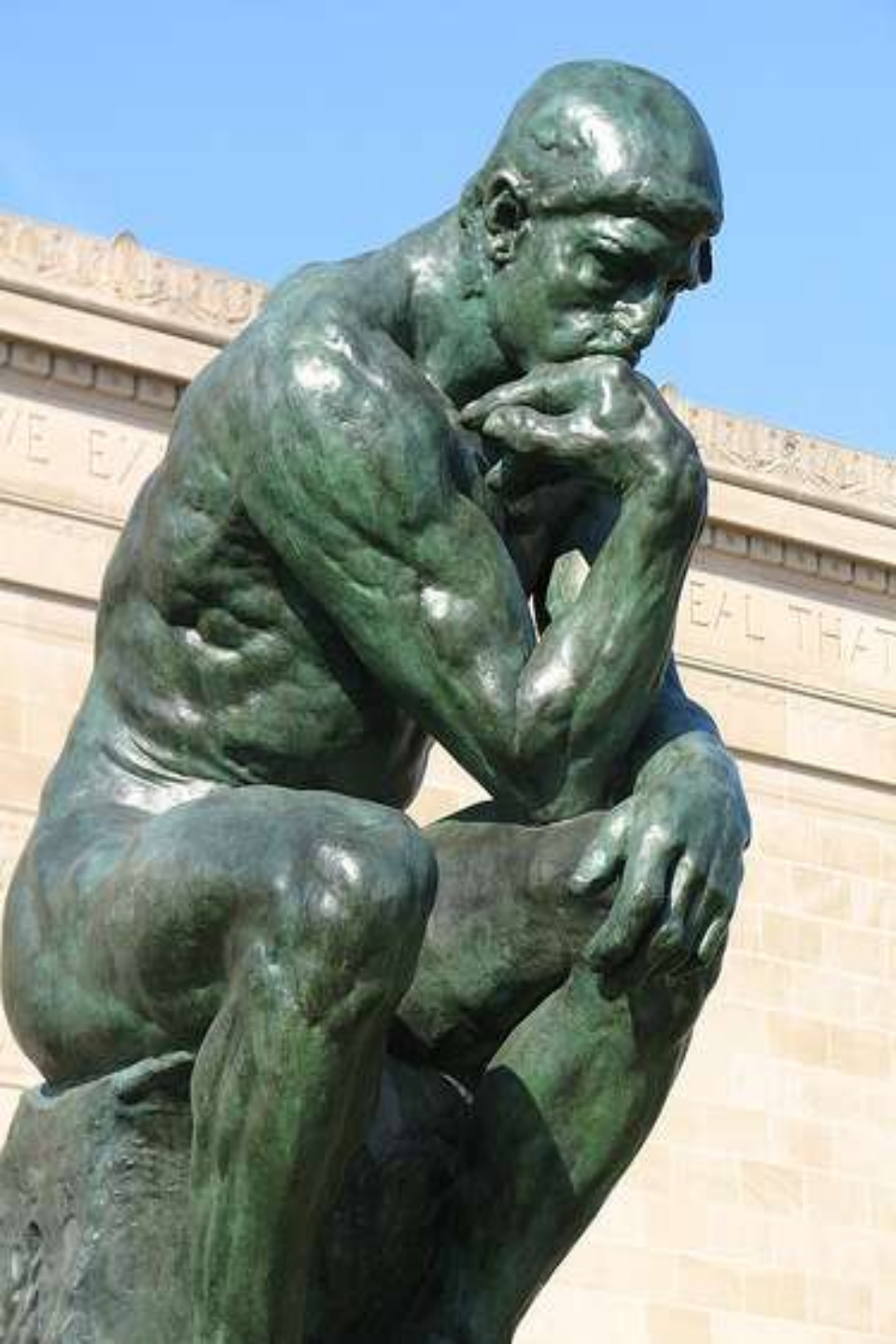
Tool 0:

Motivation

We have the motivation to become a Learning organization; does your organization have motivation?

Tool 1:

Focus and reflection: the wisdom to want to learn, and to do something with that



***“Wisdom is
the
difference
between
knowledge
and
experience.”***

– Ancient proverb

Confucius indicated that people come to wisdom in three ways:



"First, by reflection, which is noblest; second, by imitation, which is easiest; and third by experience, which is the bitterest."



“Progress is impossible without the ability to admit mistakes.”

– Masaaki Imai

***This is
where
learning
starts***

***“Progress is
impossible
without the
ability to
admit
mistakes.”***

– Masaaki Imai

Hansei and Kaizen

Hansei is one of the keys to **kaizen**, as the concept itself focuses on improvement as opposed to punishment.

When something is not going like you want it to, it is expected that you will **learn lessons** from it, and find how to improve it.

A Start: What have you learned?

LEAN PROCESS IMPROVEMENT SCOPING DOCUMENT- Preparation Guidelines

Hint: Convert "problem" to "process problem" and then prepare a SIPOC prior to developing Scoping Document



1. PROJECT NAME	Best Practice: Include an Action Verb (What we want to do) + Noun (What do we want to impact or improve?) Such as "Reduce the number of days to hire a new employee".
2. DATE SUBMITTED OR REVISED	
3. REASON FOR IMPROVEMENT <i>(Why is this important to the organization)</i>	What we want to improve, and why. For problems: What is occurring, what is happening, what "pain" are we and/or our customers experiencing? What is wrong or not working? Best practice: tie directly to customer pain. When did this problem start? How long has it been going on? Where does it occur? How much, or what is the extent or magnitude of the problem? For opportunities (such as replication and innovations): what is the opportunity? Why should we pursue this opportunity? Why now?
4. TARGETED OUTCOMES <i>(Often informed by visioning process and interviews)</i>	<ul style="list-style-type: none"> • What are the specific outcomes we expect? Such as: "Reduce number of days for this process by 50%". • Which metrics will this project impact (ties in Section 7 of this scoping document).
5. RESOURCES FOR THIS PROJECT	<u>Names and Roles</u>
5.1. Project Sponsor	The person who is accountable for the success of the project.
5.1a. Process Steward <i>(if different from Sponsor)</i>	The person who is accountable for the ongoing monitoring and success of the process that will be improved by this Project <i>(if different from the Sponsor)</i>

HANDOUT

Tool 1:

Focus and reflection: the wisdom to want to learn, and to do something with that

If you don't know where to start, then choose to make something **SIMPLER**

"Any intelligent fool can make things bigger and more complex.

It takes a touch of genius - and a lot of courage - to move in the opposite direction."

- Dr. Albert Einstein



Tool 1:

**Focus and reflection: the wisdom to
want to learn, and to do something with
that**

Tool 2:

***Executive
support to
learn and
improve***



“Making government more effective, efficient and elegant means listening to our state employees and learning from them how we can do better.”

- Governor John Hickenlooper



“That is why we initiated the Lean program in almost every state agency, where employee teams are now actively identifying waste and inefficiency to create savings.”

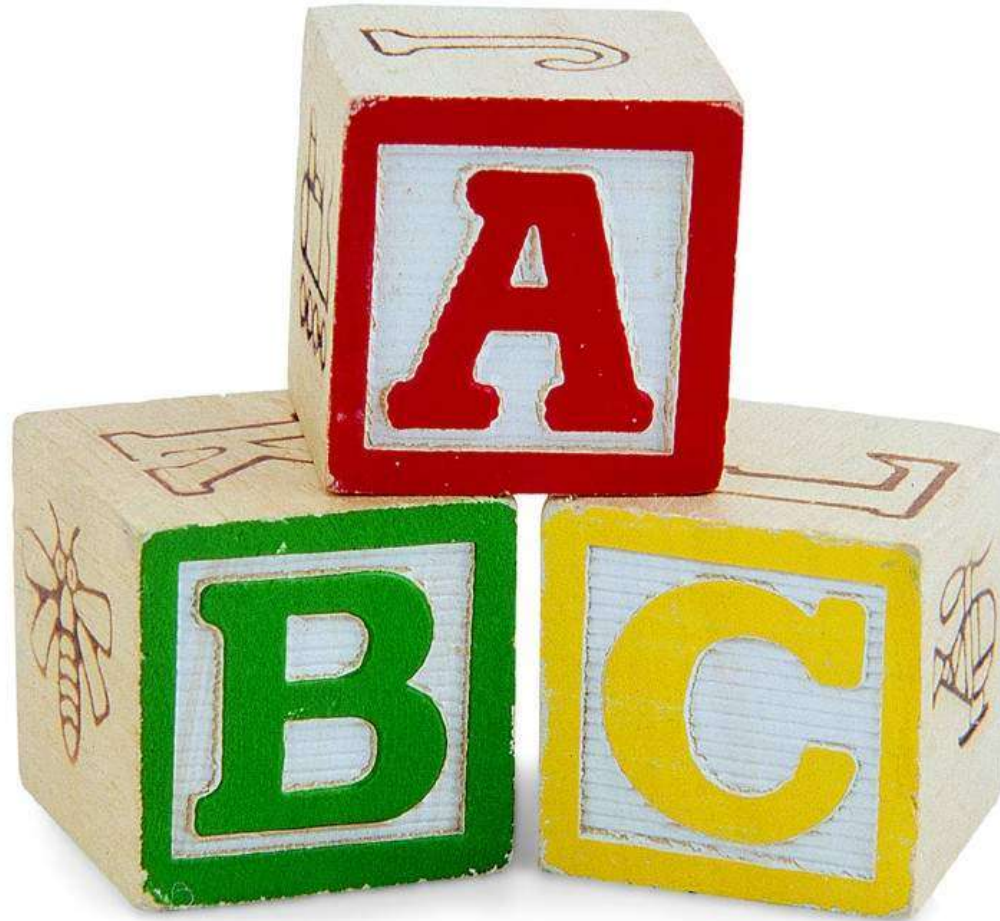


“Like any business, CDOT needs to constantly review our processes and procedures, then make needed adjustments and improvements to ensure that we are delivering the best customer service possible.”



**- CDOT Executive Director
Don Hunt**

ABC's of executive leadership



HANDOUT

Tool 2:

***Executive
support to
learn and
improve***



Tool 3:

Getting organized: treat every learning opportunity you pursue as a Project



**“All
improvement
happens
project by
project, and in
no other way.”**

– Joe Juran

Improvement Effort: _____

Sponsor: _____

Person(s) working on this: _____

Date started: _____

Current date: _____

HANDOUT

1 Reason for Improvement	4 Gap Analysis	7 Complete Implementation
2 Initial State	5 Possible Solutions	8 Evaluate Implementation
3 Target State	6 Rapid Experiments	9 Insight and Next Steps

Improvement Effort: _____

Date started: _____

Sponsor: _____

Current date _____

Person(s) working on this: _____

1 Reason for Improvement	4 Gap Analysis	7 Complete Implementation
Succinct statement of what you want to improve, and why	Analysis of why there is a difference between boxes 2 and 3	What is left to do to implement the solution after learning from your rapid experiments
2 Initial State	5 Possible Solutions	8 Evaluate Implementation
Where you are now	Ways for closing that gap	Measuring the results of what you implemented – did you close the gap?
3 Target State	6 Rapid Experiments	9 Insight and Next Steps
Where you want to be	Small-scale testing of Possible Solutions (if applicable) to close the gap	Lessons learned and future opportunities

Tool 3:

Getting organized: treat every learning opportunity you pursue as a Project

AND

KEEP IT VISIBLE!

Improvement Effort: _____

Date started: _____

Sponsor: _____

Current date _____

Person(s) working on this: _____

1 Reason for Improvement	4 Gap Analysis	7 Complete Implementation
Succinct statement of what you want to improve, and why	Analysis of why there is a difference between boxes 2 and 3	What is left to do to implement the solution after learning from your rapid experiments
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Box 9, “Insight”: Capture and utilize lessons learned at all levels

- Organizations often make the same types of mistakes repeatedly. This is true from strategic decisions to the front line.
- The true learning organization does not repeat such errors over a long period of time.
- It captures the error, determines its root cause, and puts in place preventive measures to ensure this type of error is not made again.

Tool 3:

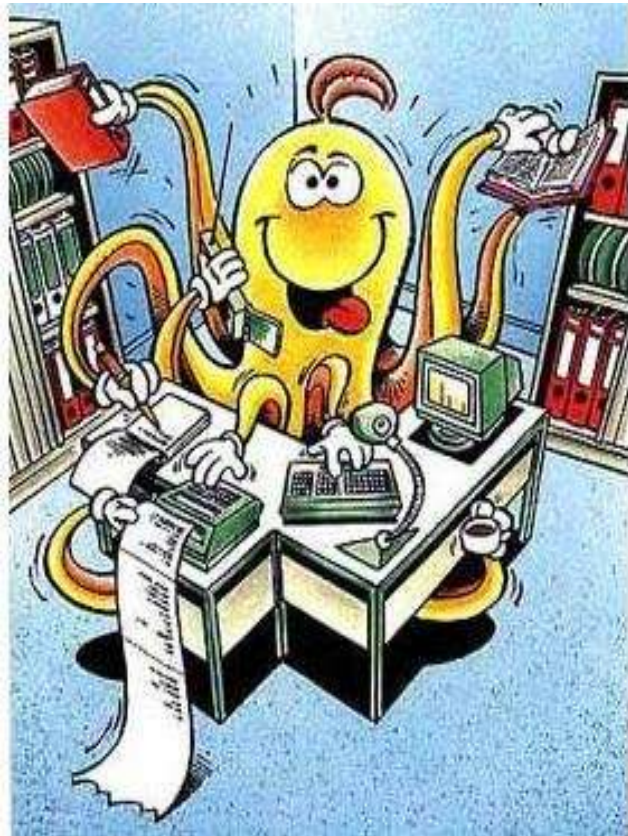
Getting organized: treat every learning opportunity you pursue as a Project

AND

STAY FOCUSED!

DON'T Multitask improvement projects!

Just a show of hands: how many of you “multitask”?



How effective are you when you are “multitasking”?



**Let's do a quick
exercise:**

**Take out a piece of
paper**

When I say go, write the **sentence** you see on this page, then below it **write the numbers 1 through 18, as shown below**

Multitasking is a lie

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

**Now, do the same thing, but
multitasking: write one letter,
then one number, and so forth
in that pattern**

Multitasking is a lie

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

What were your results?

Multitasking is a lie

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Driving while multitasking



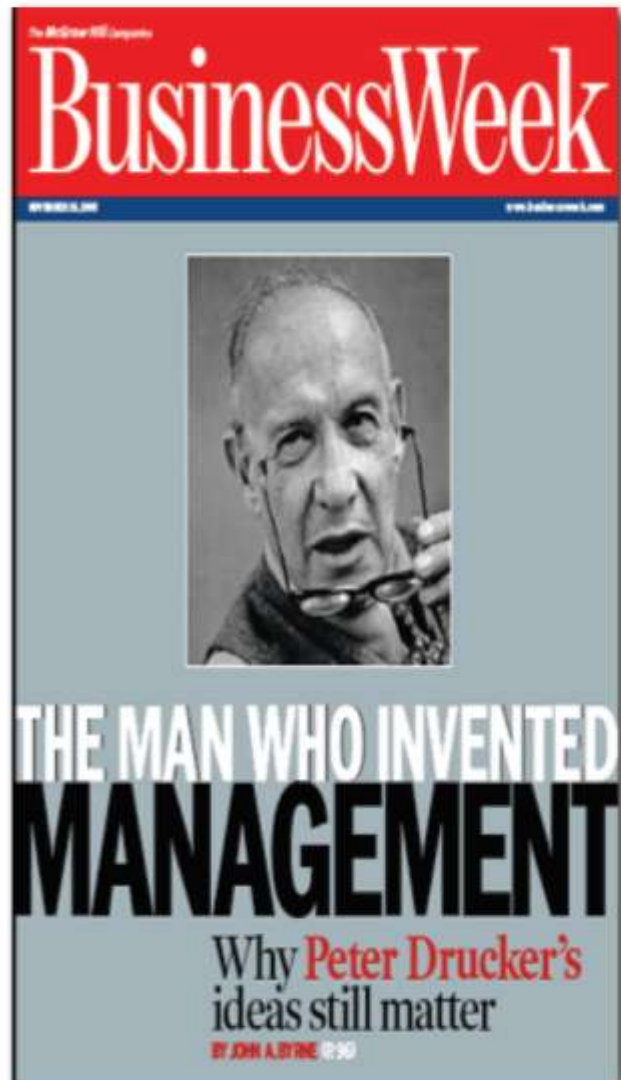
Driving while multitasking

- In 2009, **20 percent of all injury crashes involved some form of distracted driving.**
- 995 people were killed in crashes involving distracted driving by way of cell phone.
- According to the University of Utah, **drivers who use cell phones have reactions as delayed as if they were driving with a blood alcohol concentration at the legal limit of .08 percent.**
- If you're using a hand-held device while driving, you're four times more likely to be involved in an accident serious enough to be injured.
- Distracted driving crashes accounted for 448,000 injured people on American roadways in 2009.
- 5,474 people were killed on U.S. roads due to distracted driving in 2009.

Improving while multitasking

- Also a problem!

“ To be effective, every knowledge worker needs to dispose of time in fairly large



chunks. To have **small dribs and drabs** of time at his disposal **will not be sufficient** even if the total is an impressive number of hours.”

**And, of course
processes
themselves do not
work well when
subject to
multitasking**

**Promote FOCUS,
not multitasking,
when you learn and
improve**

“We cannot do everything, and there is a sense of liberation in realizing that. This enables us to do something, and to do it very well.”

– Oscar Romero



Tool 4:

No one is an island

Tool 4:

Get together with someone else

Improvement Effort: _____

Sponsor: _____

Person(s) working on this: _____

Date started: _____

Current date: _____

1 Reason for Improvement	4 Gap Analysis	7 Complete Implementation
Succinct statement of what you want to improve, and why	Analysis of why there is a difference between boxes 2 and 3	What is left to do to implement the solution after learning from your rapid experiments
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Tool 4:

Get together with someone else

Why: Reason 1

“Never doubt that a small group of thoughtful, committed people can change the world. Indeed, it is the only thing that ever has.”

- Margaret Mead



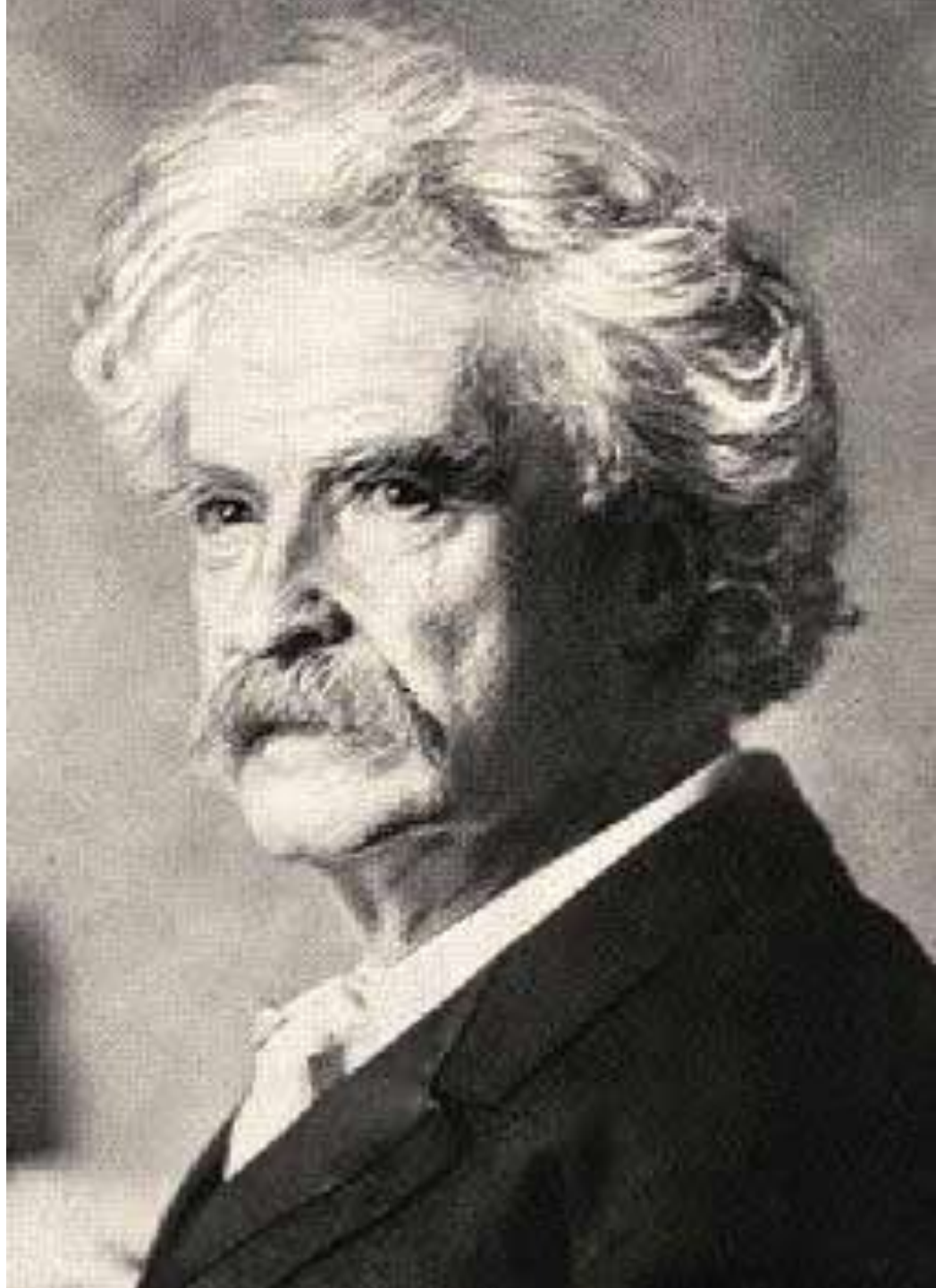
Tool 4:

Get together with someone else

Why: Reason 2

***“It ain't what
you don't know
that gets you
into trouble.
It's what you
know for sure
that just ain't
so.”***

– Mark Twain



Tool 4:

Get together with someone else

Why: Reason 3



***“A relentless
barrage of
“why’s” is the
best way to
prepare your
mind to pierce
the clouded
veil of thinking
caused by the
status
quo. Use it
often.”***

- Shigeo Shingo



“People who work together will win, whether it be against complex football defenses, or the problems of modern society. Individual commitment to a group effort – that is what makes a team work, a company work, a society work, a civilization work.” - Vince Lombardi

Tool 4:

**No one is an Island: Get together with
someone else**

Tool 5:

Standardize first

***“Where there
is no
Standard
there can be
no
Improvement”***

- Taiichi Ohno



***“Where there
is no
Standard
there can be
no
Improvement”***

- Taiichi Ohno

**Do you
believe this?**

EXERCISE

1. Take blank sheet of paper.
2. Then

EXERCISE

1. Take blank sheet of paper.
2. Draw a pig.
3. Name your pig.
4. Show it to the folks at your table.
5. Wait for further instructions.

EXERCISE

Let's do it again

1. Take blank sheet of paper.
2. Draw a pig, following the standard.
3. Name your pig.
4. Show it to the folks at your table.

Advantages of Standardized Work

- The basis for continual improvement.
- A powerful tool for eliminating waste.
- A method of building-in quality.
- Simple, clear & visual documents showing a Standard method of doing a job.
- Results are consistent.
- Ensures correct use of tools and machines.
- Shows safe work, based on human movements.
- **Ensures your pig is the right pig.**

Tool 5:

Standardize first

Tool 6:

**Remember to help people adapt to
change**

Tool 6:

**When you learn and improve, it is
change**

**Remember to help people adapt to
change**

Start with Managers

Tool 6

Process Improvement: The Roles of Managers During Times of Change – Some tips

Longer version: activities during each phase

HANDOUT

A. Adapting to this change myself

UNDERSTAND - I will seek out information to understand why this change is happening.	
ASK QUESTIONS - I will ask questions to make sure I understand how this change will impact me and my team.	
PROVIDE FEEDBACK - I will provide feedback in a clear, non-confrontational manner to my manager and to the Sponsor of this change (or project team), including any objections I have.	
DEAL WITH YOUR OWN RESISTANCE - If I am resistant to the change, I will figure out the root cause of my resistance and will work with my manager to find solutions to my objections.	
SUPPORT AND PARTICIPATE - Before introducing this change to my people, I will decide to support and participate in the change.	

B. Introducing this change to my team

SHARE INFORMATION - I will share the nature of the change with my team, in context with the broader vision and direction of the organization.	
EXPLAIN WHY - I will explain why this change is happening, including the risk of not changing.	
ENCOURAGE DIALOGUE - I will formally encourage dialogue with my team by asking them to 1) provide feedback to me, and 2) raise their questions and concerns about the change.	
CORRECT MISINFORMATION - I will quickly correct any misinformation about the change.	
ADVOCATE - I will be an advocate for the change, and will visibly demonstrate my personal support and enthusiasm for it.	

C. Managing my team through this change transition

LINK AND LISTEN - I will have sessions with my team to 1) identify how they will be impacted by the change; 2) link the change to their job roles; and 3) listen to their concerns.	
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**When you learn and improve, it is
change**

**Remember to help people adapt to
change**

Start with Managers

More tools

Lean at CDOT

http://
[www.coloradodot.info/](http://www.coloradodot.info/business/process-improvement)
business/
process-improvement

Details are on your takeaway sheet

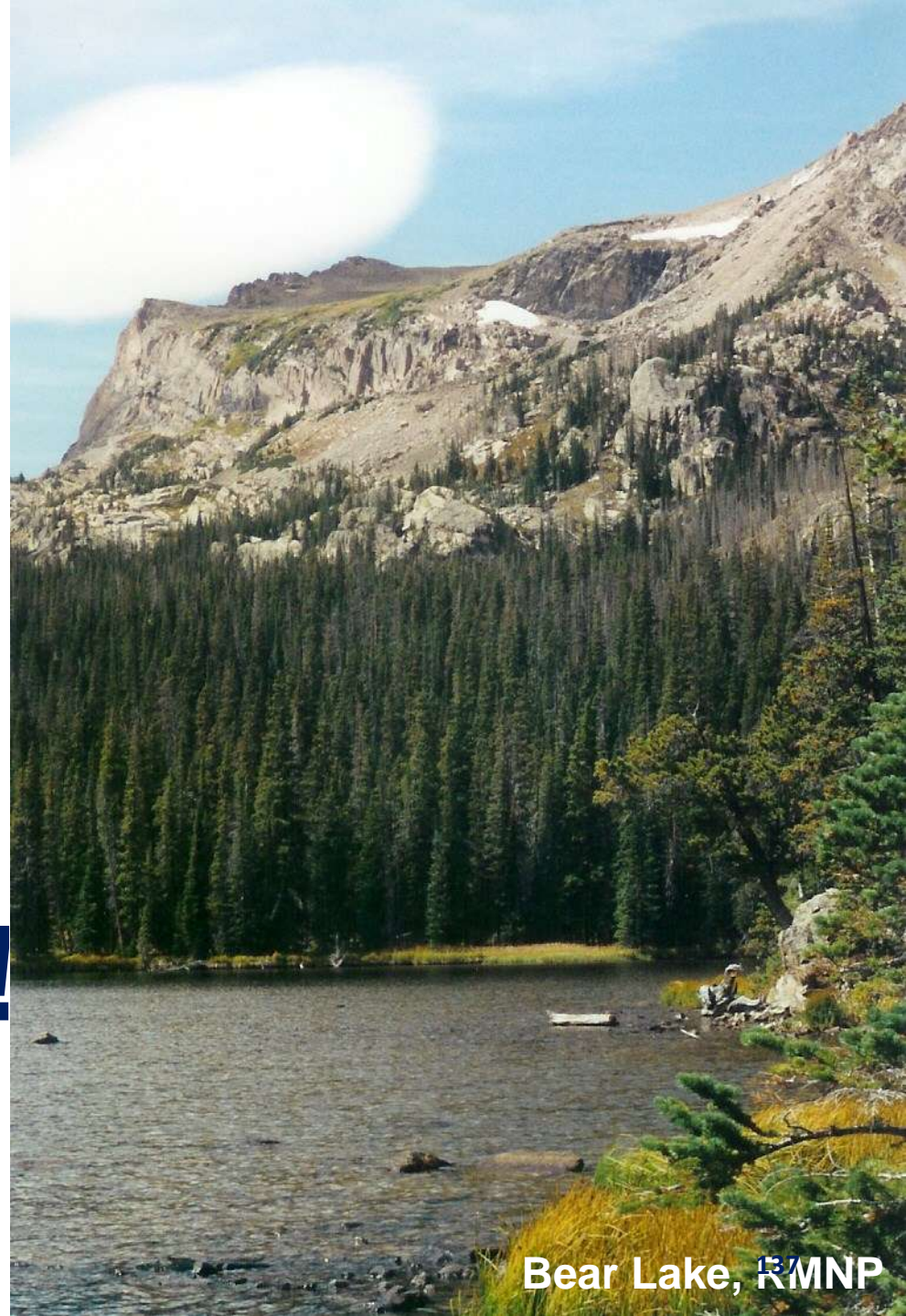
**Learning about Lean:
one (free) place to start**

BMGI.org

Details are on your takeaway sheet

**What we
covered**

**Using Lean
to become a
Learning
Organization!**



Bear Lake,  MNP

***“A good plan,
violently
executed now,
is better than a
perfect plan
executed next
week.”***

– General George Patton



So, what did you learn, and what is on your plan?

Lean and the Learning Organization

Thursday, November 15, 2012

ASQ
AMERICAN SOCIETY
FOR QUALITY™

My learning objective(s): _____

... In support of this (these) organizational goal(s): _____

My key takeaways and action items	What I am going to do with this, and by when	People I need to involve
1.		
2.		
3.		



A photograph of the Pawnee Buttes, two prominent, flat-topped rock formations in Nebraska. The buttes are illuminated by the warm, golden light of a setting or rising sun, creating a dramatic contrast with the deep blue sky and the dark, silty slopes. The foreground shows a grassy hillside leading up to the base of the buttes.

**Do you have any
(easy) questions?**



Thank you!

