



# In-Place Recycling In California

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## *Western States Regional In-Place Recycling Conference*

*September 11-13, 2012*

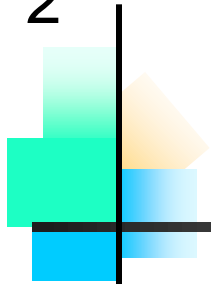
*Ontario, California*

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*Pavement Engineer*

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# California

Area – 163,707 square miles  
3<sup>rd</sup> largest state after Alaska  
& Texas.

58 Counties

Population > 37 million,  
most populous state in the  
USA



# Caltrans Demographics

- In excess of 20,000 PYs
- 15,000 miles of SHS, Approximately 50,500 lane miles (55% annual vehicle miles of travel).
- Approximately 70% of the California highway system are asphalt.
- In 2010/11, delivered 697 projects totaling \$4.6 billion from all funding programs (about \$2 billion in pavement projects).
- HM program allocation funding is currently \$234 million per year.

# CT past experience with In-Place Recycling

- ❖ CIR & HIR used in 1970's and early 1980's
- ❖ No interest in late 1980's & 1990's
- ❖ 3 HIR projects piloted in 2006-2008
- ❖ 6 CIR projects in 2005/2006
  - Majority yielded positive results
  - Some challenges encountered
  - Recycling TG under PPTG pledged to work as a team to improve CIR specifications

# How far have we come?

- **34 CIR projects in 2009/10 to 2011/12**
- **Last year 23 CIR projects**
- **8 CIR projects planned for 2012/13**
- **We had some challenges:**
  - Variability of existing pavement
  - Emulsion penetration range
  - LP-8, mix design
  - Coring vs. milling for sampling
  - Smoothness
  - QC/QA

# Why In-Place Recycling

- ❑ Reduce overall cost
- ❑ Re-use valuable existing materials (agg. & asphalt binder)
- ❑ Eliminate distress, provide uniform platform
- ❑ Prevent/reduce future reflective cracking
- ❑ Long hauls for HMA (project location)
- ❑ Recycled pavement can be recycled again

# CIR on SR 33 Chester



# CIR train on SR 62







# CALIFORNIA STATE ANIMALS



**CALIFORNIA GOLDEN TROUT**  
*State Fish*



**SABER-TOOTH CAT**  
*State Fossil*



**CALIFORNIA DOG-FACE BUTTERFLY**  
*State Insect*



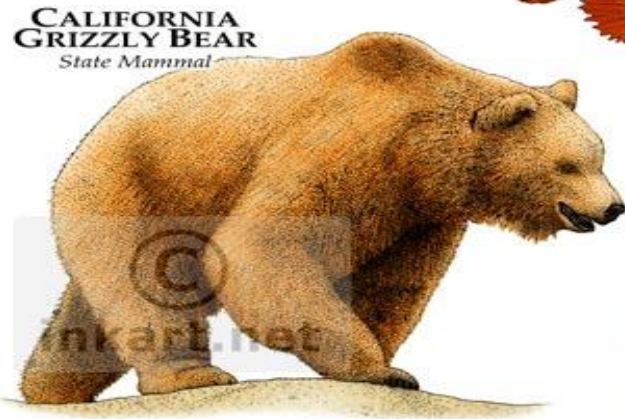
**CALIFORNIA QUAIL**  
*State Bird*



**CALIFORNIA GRAY WHALE**  
*State Marine Mammal*



**GARIBALDI FISH**  
*State Marine Fish*



**CALIFORNIA GRIZZLY BEAR**  
*State Mammal*



**DESERT TORTOISE**  
*State Reptile*





***Thank You for Your Attention***

***Any Questions?***