

# Capability of the Current New Mexico Water Policy to Adapt to Coming Challenges: New and Innovative Ways to Meet Future Needs

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New and Innovative Ways to Meet Future Needs

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Figure 1. Introduction.

What are the most important things that science is telling us right now about water in New Mexico?

They have to do with future water supply

Figure 2. Importance of future water supply.

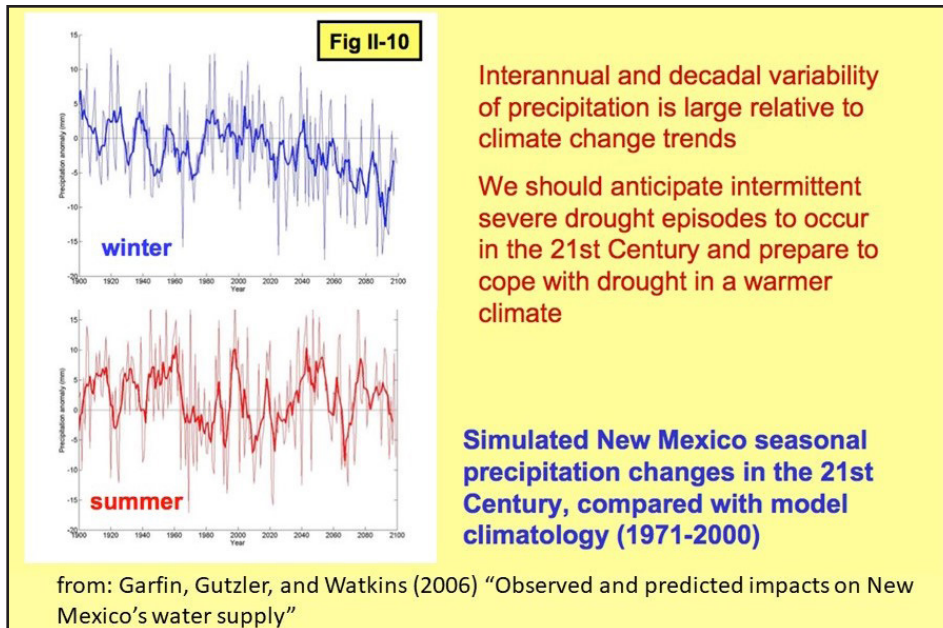


Figure 3. Long-term trends in total precipitation are relatively uncertain.

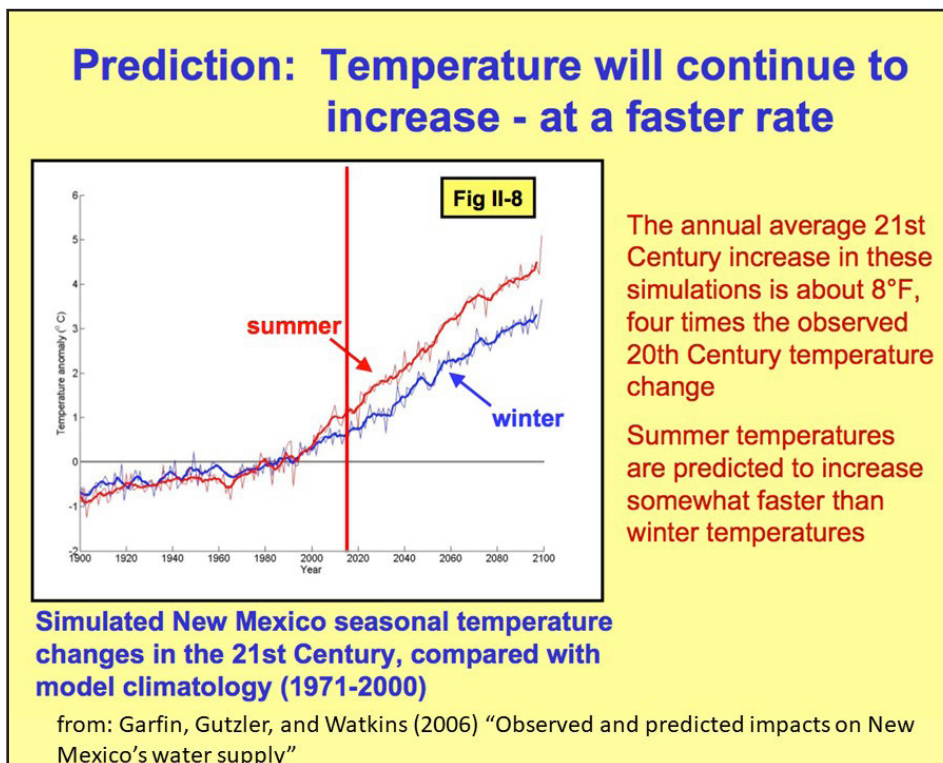


Figure 4. Temperature will continue to increase at a faster rate.

### However, temperature is increasing globally and in New Mexico

The rate of warming has been about twice the global average rate (continental effect)... about 2° F over the century and 4° F since 1960.

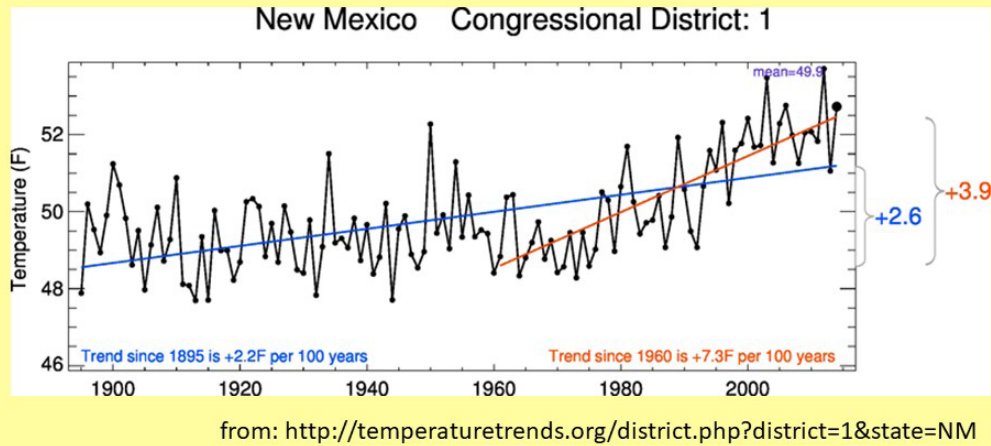


Figure 5. Temperature is increasing globally, as well as in New Mexico.

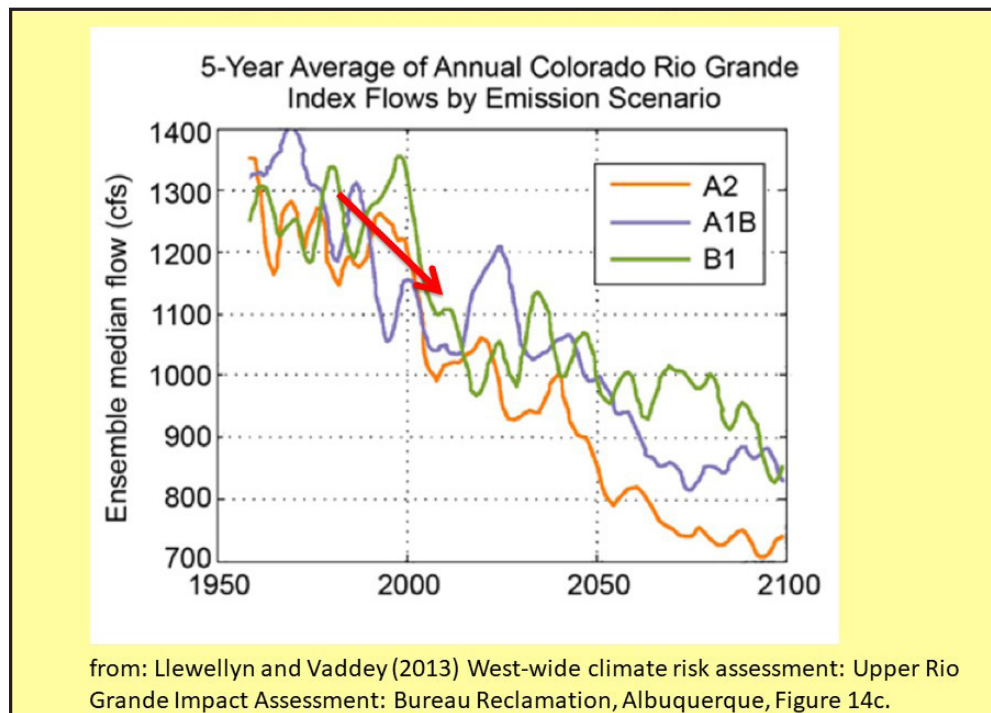


Figure 6. Projections of 21st century runoff.

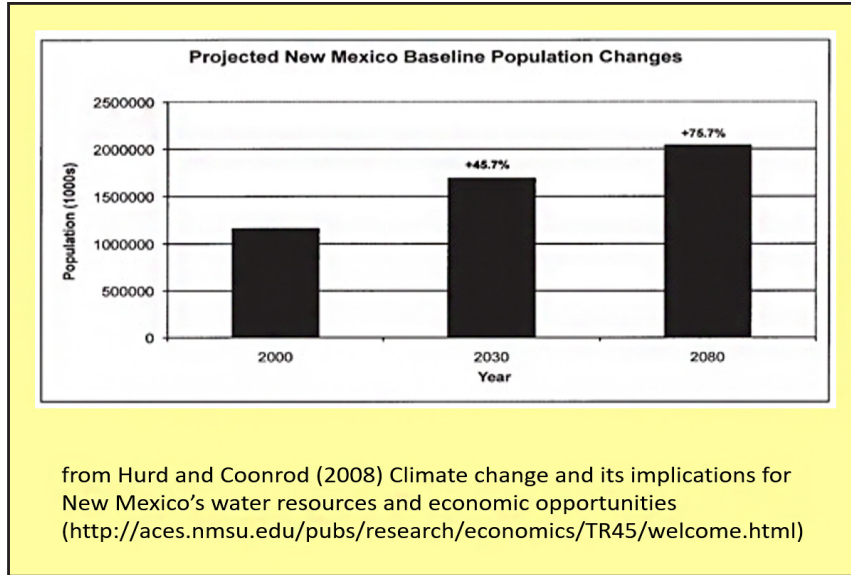



Figure 7. Projected population growth in New Mexico.


Science tells us that New Mexico faces a shrinking water supply and a growing population



What are the legal and policy tools available to address this challenge?

Figure 8. New Mexico's shrinking water supply.

Figure 9. Morris Bien, Codifier of Western Water Law.



3.43. Morris Bien, the head of Reclamation's early legal efforts. *Reclamation Record*, June 1920.

Before he studied law, Morris Bien was a **civil engineer**, with a degree from UC Berkeley

**The doctrine of Prior Appropriation**

- Prior appropriation was not a “native” New Mexico legal doctrine
- It was imposed on New Mexico by the U.S. Reclamation Service (**Morris Bien’s employer**)
- The goal was to encourage rapid development of agricultural land, to legally protect those who took the development risk, and to discourage over-development

Figure 10. The doctrine of Prior Appropriation.

**What kind of job has Prior Appropriation done?**

- In many respects, prior appropriation has been very successful as a set of principles for management, but, it must be acknowledged that...
- **Prior appropriation** is also in large part a **legal fiction**. In big, multi-user drainages such as the Rio Grande, priority of right is almost impossible to establish, the actual diversion of water is only vaguely related to the water right, and the enforcement system (priority administration) has never even been attempted.

Figure 11. Assessment of Prior Appropriation.

**In other words, we know that a time of severe shortage is approaching, but the plan for managing during shortage can’t actually be implemented.**

Figure 12. Management during severe water shortage.

**How is water distribution actually managed?**

- **Shared shortage:** in time of shortage, water is proportionally divided among agricultural right holders
- **Ad-hoc regulation:** e.g., Steve Reynolds and conjunctive management
- **External authority:** e.g., silvery minnow and the Endangered Species Act
- **Negotiated agreements:** e.g., water for the silvery minnow, many other examples

Figure 13. How is water distribution actually managed?

**Where are we headed under current laws?**

- **Inexorable erosion of agricultural water rights:** Municipalities and industry offer alluringly high prices. Exigency will eventually induce most farmers to sell out.

Figure 14. Where are we headed under current laws? Erosion of agricultural water rights.

**Where are we headed under current laws?**

- **Conversion of farmland to low-density housing:**
  - little reduction in water consumption
  - right to consumption becomes inflexible





Figure 15. Conversion of farmland to low-density housing.


**Where are we headed under current laws?**

- **Domination of water use by urban centers:** Where do we want to stop?



Phoenix, AZ

is this our goal?



or is this?  
(at 5 gal per day per person the Rio Grande could support a population of 60 million)

Figure 16. Domination of water use by large urban centers.

### Where are we headed under current laws?

- **Loss of all riparian ecosystems:**  
Caught between the demands of growing population and the delivery requirements of the Rio Grande Compact, the river will have to be confined.



Salt River, Phoenix, 1891

Figure 17. Loss of all riparian ecosystems.

### Where are we headed under current laws?

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Salt River through Phoenix  
Google earth

Figure 18. Loss of all riparian ecosystems (cont.).

### Is it time to consider a new water code?

Our current code was formulated in the late 19<sup>th</sup> century to meet a specific need: encouraging rapid and equitable expansion of irrigation.

Is it reasonable to expect it to solve the problems of expanding post-industrial society and global climate change in the 21<sup>st</sup> century?

**Or is it time to start thinking about alternatives?**

Figure 19. Is it time to consider a new water code?

**If we're going to talk about significant changes, somebody has to put some ideas on the table. So here are mine...**

Figure 20. My thoughts.

### A Caution

We have to acknowledge that there will be a large cost (legal, personal, institutional, infrastructure...) to any substantial revision to the water code.

**Perhaps the benefits of change won't justify the costs of change. That is a very real possibility.**

Figure 21. The costs of change.

### Principles I would suggest

**Formally recognize that water is New Mexico's limiting resource.**

Money, energy, population, intellectual capital – all of these can be imported or increased. Water is a zero-sum game. Any new use of water requires taking it away from a user already here. **Where the water goes determines what the State will be.**

Figure 22. Formally recognizing that water is New Mexico's limiting resource.

**Principles I would suggest**

Strengthen the principle that water is a resource owned by the public as a whole.

New Mexico's constitution recognizes public ownership of water, but is never really specific in balancing that with private "appropriation" of water. **It needs to strengthen the statement of the right of the public to manage and allocate water in the public interest.**

Figure 23. Strengthening the principle that water is a resource owned by the public as a whole.

**Principles I would suggest**

Maintain private rights to water diversion and make temporary transfers (i.e., leasing) easier.

Investment in society by individuals and corporations requires water security, but temporary transfers can serve as a "safety valve" to reallocate water where it is needed in either times of excess supply or shortfall.

Figure 24. Maintain private rights to water diversion and make temporary transfers easier.

**Principles I would suggest**

Recognizing that water is NM's limiting resource, allocate water so as to achieve the societal goals of the population.

Under the current laws, transfers of water are inevitable and invisible and will finally result in a state that most citizens probably consider undesirable. Instead, **why not allocate water to the major sectors (agriculture, municipal, industry, environment) to achieve the desired state?**

Figure 25. Recognizing that water is New Mexico's limiting resource.

**Principles I would suggest**

Explicitly recognize that water supply may decline and make provisions for dealing with that.

Don't blindly expand consumptive demand (e.g., population) without agreeing beforehand how redistributions will be made when the situation arises (which means agreeing that the losses from redistribution outweigh the gains). Priority administration generally is not workable. **Come up with new approaches to shortage administration that will achieve the desired ends.**

Figure 26. Recognizing that water supply may decline and make provisions for dealing with that.

**Is it time to consider a new water code?**  
 Is change possible for something as conservative as water rights?


**Are there any examples?**

- The Bien Code was a radical change when it was adopted
- South Africa completely moved away from the riparian doctrine after apartheid was abolished
- Australia did the same after seven years of devastating drought

Figure 29. Examples of new water codes.

**Do the circumstances justify considering a new water code?**

**If change is going to happen, it will have to start with scientists and engineers who see the problems that lie ahead and who can envision solutions to them**



3.43. Morris Bien, the head of Reclamation's early legal efforts. *Reclamation Record*, June 1920.

Morris Bien received his training as an engineer from UC Berkeley, graduating in 1879

Figure 30. The role of scientists and engineers.

**I think it's time we at least started to talk about it.**

Figure 31. Conclusion.