

Colorado River Law and Policy: Frequently Asked Questions (FAQs)

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This is a working document that will be continually updated as information on the Colorado River evolves. For the latest version, or questions, comments, and further information, please visit www.waterpolicy.info or contact at crgi.cu@gmail.com

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What are the key elements (legislation, litigation, settlements, agreements, and so on) that comprise the “Law of the River”?

Colorado River Compact of 1922

The 1922 Colorado River Compact is the foundation for the all-encompassing “Law of the River” and determined broadly how the states were to be divided and the river to be allocated. Negotiated by the seven Basin states and the federal government, the Compact divides the Basin in two divisions (Upper Division – Colorado, Wyoming, Utah, New Mexico and Lower Division – Arizona, Nevada, and California) and helped ease tensions between the two divisions. The Upper Division was concerned the Lower Division states were growing so rapidly that they would, under the Prior Appropriation Doctrine, secure rights to a large portion of the Colorado River. The Lower Division states did not want to limit their current growth and wanted secure, reliable rights that held enough water to satisfy their increasing demands.

Although no specific allocations were made to the individual states in the original Compact, each division was allocated the right to develop and use 7.5 million acre-feet annually, with the Lower Division given another 1 million acre-feet for consumptive use. The Compact, among a few other stipulations, also required the Upper Division not to deplete the flow of the River at Lee Ferry below 75 million acre-feet, on a ten year rolling average (this part of the Compact has sparked much debate, and is addressed below in the “ambiguities” section).

It should be noted that although Mexico and Tribal interests were not involved in the negotiating process, both parties are mentioned in the Compact. Article VII states that the Compact will not affect current obligations the United States has to Indian Tribes. Article III (c) states that should a deal with Mexico be negotiated in the future, the “burden of such deficiency” should be equally shared by both the Upper and Lower Divisions (this equal sharing of deliveries to Mexico is another contentious debate, and is also discussed in the “ambiguities” section).

For further information on the Colorado River Compact of 1922:

<http://www.usbr.gov/lc/region/g1000/pdfiles/crcompct.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

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Boulder Canyon Project Act of 1928

The Boulder Canyon Project Act of 1928 served several purposes. Not only did it officially ratify the 1922 Colorado River Compact, but it also authorized the construction of Hoover Dam and related irrigation facilities in the Lower Basin. This act also apportioned the Lower Basins allocation among the three states: Nevada: 300,000 acre-feet, Arizona: 2,800,000 acre-feet, and California: 4,400,000 acre-feet. Finally, the act also authorized the Secretary of the Interior to be “water-master” for the Colorado River waters in the Lower Basin.

For further information on the Boulder Canyon Project Act of 1928:

<http://www.usbr.gov/lc/region/g1000/pdfiles/bcpact.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

1944 Water Treaty with Mexico

The 1944 Water Treaty with Mexico allocated annually 1,500,000 acre-feet to be delivered across the international border. The Treaty stipulates that in years of surplus, as determined by the United States, Mexico may receive an additional 200,000 acre-feet. Conversely, in years of ‘extraordinary drought’ or damage to irrigation facilities in the United States, Mexico’s allocation may be reduced in the same proportion as the consumptive uses in the United States. The Treaty, however, does not define ‘extraordinary drought’, which has led to some debate among the Basin states and Mexico. This debate regarding the definition of ‘extraordinary drought’ is discussed below in the ‘Law of the River ambiguities section’.

For further information on the 1944 Water Treaty with Mexico:

<http://www.usbr.gov/lc/region/g1000/pdfiles/mextrety.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

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Upper Colorado River Basin Compact of 1948

The Upper Colorado River Basin Compact of 1948 apportioned the Upper Basin's allocation among Colorado, Wyoming, Utah, New Mexico and Arizona (although Arizona is a Lower Basin state, a small part is actually in the Upper Basin). Differing with the Lower Basin, which allocated exact quantities, the Upper Basin states allocations are based on percentages: Colorado – 51.75%, Wyoming – 14%, Utah – 23%, New Mexico – 11.25%, and Arizona – 50,000 acre-feet. The Compact of 1948 also established the Upper Colorado River Commission, which is comprised of one representative commissioner from each Upper Basin state, and one commissioner representing the United States. The Upper Colorado River Commission manages the Upper Basin, a role similar to the Secretary of the Interior in the Lower Basin.

For further information on the Upper Colorado River Basin Compact of 1948:

<http://www.usbr.gov/lc/region/g1000/pdfiles/ucbsnact.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

Colorado River Storage Project of 1956

The Colorado River Storage Project of 1956 was an Upper Basin-wide development plan for the Upper Basin states to better utilize their Colorado River allocations through reclamation, flood control, and hydroelectric power production. The Project authorized the construction of the main Upper Basin dams, reservoirs, hydroelectric facilities, and irrigation projects, including the Curecanti, Navajo, Flaming Gorge, and Glen Canyon dams.

For further information on the Colorado River Storage Project of 1956:

<http://www.usbr.gov/lc/region/g1000/pdfiles/crspuc.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

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1964 *Arizona v. California* U.S. Supreme Court Decision

In 1963 the Supreme Court settled an ongoing dispute between Arizona and California that had lasted for 25 years. Arizona wanted to construct the Central Arizona Project (CAP) to utilize their full Colorado River allocation, but California objected arguing that Arizona was already utilizing their allocation through development on the Gila River, a tributary to the Colorado River. The dispute regarding whether or not tributaries in the Lower Basin constitute Colorado River apportionments reached the Supreme Court, where the Supreme Court held in favor of Arizona. The Court held in *Arizona v. California* that Lower Basin states have the right to appropriate and use tributary flows before they reach the main-stem of the Colorado River, without impact on respective Colorado River allocations.

The Supreme Court issued its decree in 1964 regarding this decision. The decree also instructed the Secretary of the Interior to prepare annual reports documenting water use in the Lower Basin states.

For further information on the Arizona v. California Supreme Court Decision:

<http://www.usbr.gov/lc/region/g1000/pdfiles/supctdec.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

Colorado River Basin Project Act of 1968

The Colorado River Basin Project Act of 1968 authorized construction of a number of projects in both the Upper and Lower Basin, most notably the Central Arizona Project (CAP) in Arizona. In authorizing the construction of CAP, however, the Act also stipulated that during times of drought or shortages, CAP's priority will be junior to that of California's Colorado River allocations.

The Act also instructed the Secretary of the Interior to plan and develop long term operating criteria for Colorado River reservoir and storage projects; these operating criteria are to be prepared in consultation with the seven Basin States.

For further information on the Colorado River Basin Project Act of 1968:

<http://www.usbr.gov/lc/region/g1000/pdfiles/crbproj.pdf>

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<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://wwa.colorado.edu/colorado_river/law.html

Minute 242 of the US-MX International Boundary and Water Commission, 1973

In 1973, the United States and Mexico agreed to Minute 242 of the US-Mexico International Boundary and Water Commission (IBWC), which required the United States to take certain actions to reduce salinity levels in the Colorado River at the point of delivery to Mexico, Morelos Dam. The Minute stipulated that the water at Morelos Dam have annual average salinity of no more than 115 parts per million (ppm).

For further information on Minute 242:

www.ibwc.gov/Files/Minutes/Min242.pdf

http://www.ibwc.gov/Treaties_Minutes/Minutes.html

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

Colorado River Basin Salinity Control Act of 1974

In response to Minute 242 in 1973, the Colorado River Basin Salinity Control Act of 1974 authorized construction of salinity control and desalinization projects near the international border, including the Yuma Desalting Plant near Yuma, Arizona. The Act is intended to improve Colorado River quality as it flows into Mexico.

For further information on the Colorado River Basin Salinity Control Act:

<http://www.usbr.gov/lc/region/g1000/pdfiles/crbsalct.pdf>

<http://www.usbr.gov/lc/region/g1000/lawofrvr.html>

http://www.usbr.gov/lc/yuma/facilities/ydp/yao_ydp.html

http://wwa.colorado.edu/colorado_river/law.html

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Grand Canyon Protection Act of 1992

Summary coming soon...

Quantification Settlement Agreement (QSA), 2003

Summary coming soon...

2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead

In response to the ongoing drought in the Southwest, and subsequent declines in Colorado River reservoir storage, the Secretary of the Interior instructed the Bureau of Reclamation to develop coordinated strategies for the operation of Colorado River storage reservoirs, most prominently Lakes Powell and Mead, during periods of drought or shortages. Criteria had been established for coordinated operation during surplus years, but there were no guidelines during shortage years.

In 2005 the Bureau initiated this process with an Environmental Impact Statement (EIS; required for any action taken by a federal agency), to determine the impacts of changing the operating criteria, and what criteria would benefit operation of the system while limiting or eliminating environmental harm.

Many stakeholders were included in the discussion for developing each of the proposed alternatives for coordinated operation. Not only were the Bureau and Basin States involved, but also non-governmental organizations, environmental non-profits, Native American tribes, federal agencies and the public were all included in the discussion. In the end, the Preferred Alternative (PA) included elements submitted by a collection of environmental organizations. The adopted guidelines included operating criteria for Lakes Mead and Powell, basing releases and conserved amounts on determined 'trigger levels' in both reservoirs. They also included the coordinated operation of Lakes Mead and Powell, and a mechanism for storing and delivering conserved water from Lake Mead, called Intentionally Created Surplus (ICS).

A Draft EIS was released in February 2007 and opened to public comment. The Final EIS was published later that year in November and Secretary of the Interior Dirk Kempthorne signed a Record of Decision in December 2007. The interim guidelines have a set time period for implementation and will

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expire in 2026; the theory being this period will give managers experience with coordinated reservoir operation and operation during periods of drought.

For further information on the 2007 Colorado River Interim Guidelines:

<http://www.usbr.gov/lc/region/programs/strategies.html>

<http://www.usbr.gov/lc/region/programs/strategies/FEIS/index.html>

http://wwa.colorado.edu/IWCS/archive/IWCS_2009_Jan_feature2.pdf

Minute 318 of the US-MX International Boundary and Water Commission, 2010

In December of 2010 the United States and Mexico negotiated an interim agreement that allows Mexico to store part of its allocation in Lake Mead, while repairs are made to infrastructure damaged during an earthquake in April of 2010. The damage would have prevented Mexico from utilizing up to 260,000 acre-feet of Colorado River water annually. Minute 318 allows Mexico to defer annual delivery of this amount through December 31, 2013, during which the water would be kept in Lake Mead. Starting in 2014, Mexico could begin to recover this deferred allotment, should their infrastructure be adequately repaired and subject to reservoir operations in the U.S.

Although this agreement is short-term, and is the result of a natural disaster, it can be seen as beneficial to both countries in the long-term management of the Colorado River. Water banking has been proposed as a strategy to mitigate risk during periods of drought, and Minute 318 gives both countries circumscribed experience in banking. The successful negotiation of Minute 318 could potentially lead the way to future agreements in which water banking could benefit users in both countries, as well as supporting Colorado River ecosystems, including the Colorado River Delta.

Finally, a bi-national agreement that is immediately mutually beneficial supports future negotiations and a respectful relationship in Colorado River management.

For further information on Minute 318:

<http://www.doi.gov/news/pressreleases/Salazar-Elvira-Announce-Water-Agreement-to-Support-Response-to-Mexicali-Valley-Earthquake.cfm>

www.ibwc.gov/Files/Minutes/Min_318.pdf

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What are some ambiguities in the Law of the River?

Despite countless negotiations, supplemental agreements, and one major instance of interstate litigation (*Arizona v. California*, 1964), several legal omissions and ambiguities remain in the Law of the River. The following section presents brief discussions of some of the prominent uncertainties, as well as some of the latest thinking of resolutions to these legal issues.

Deliveries to Mexico

The Colorado River Compact of 1922 did not provide an allocation to Mexico, but acknowledged the possibility that this might happen by Treaty at a later date. In 1944, Mexico and the United States signed the Utilization of Water of the Colorado and Tijuana Rivers and of the Rio Grande Treaty. Under Article X, the United States must deliver 1.5 maf per year to Mexico. The United States must deliver an additional 200,000 acre-feet per year if there is surplus water available. In the event of “extraordinary drought or serious accident to the irrigation system,” the water allocated to Mexico “will be reduced in the same proportion as consumptive uses in the United States are reduced.”

The 1944 Treaty with Mexico can be found here:

<http://www.usbr.gov/lc/region/g1000/pdfiles/mextrety.pdf>

There are two major legal ambiguities surrounding the Mexican allocation. These are discussed below:

The Upper Basin’s Mexican Treaty Obligation – the tributaries issue

The dispute about Mexican Treaty delivery obligations is centered almost entirely on the Lower Basin tributaries, which may not be included in the basin allocations. Without the tributaries, the water supply in the Lower Basin available to meet the Treaty obligation drops dramatically and the Upper Basin faces a higher burden in ensuring adequate deliveries.

According to the 1922 Compact, deliveries to Mexico are to be made from surplus water in the “Colorado River System” above the aggregate requirements of Article III (a) and (b). When there is no “surplus” water, the Upper Basin is required to bear one half of the deficiency – up to 750,000 acre-feet per year. Without surplus, the Upper Basin has to deliver at least 8.23 maf per year to Lee Ferry,

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perhaps more if compensation for transit losses is required. In low flow years, this could result in curtailment of Upper Basin users. The Comptroller General of the United States summarized the dispute:

The Lower Basin States contend that there is no surplus and the Upper Basin's share of the Mexican Treaty delivery obligation is therefore one-half of the total obligation of 1.5 maf plus one-half of the losses incurred in delivering the water from Lee Ferry to the Mexican border. The Upper Basin States believe that surplus water exists in the Lower Basin and therefore they are not required to release any water to meet the Mexican Treaty obligation.

This dispute was nearly non-existent until the Supreme Court, in *Arizona v. California*, disregarded the Arizona and Nevada tributaries when determining state allocations in the Lower Basin. The Court declared that under the Congressional scheme established in the Boulder Canyon Project Act, "the tributaries are not included in the waters to be divided..." The Court reasoned that legislative history and the alternative proposals that eventually culminated in the Boulder Canyon Project Act "consistently provided for division of the mainstream only, reserving the tributaries to each State's exclusive use."

Under the plain language of the Compact, the Lower Basin's apportionment in Article III (a) is of Colorado River System water, which includes both main-stem and tributary water. The Compact Commissioners certainly intended to subject the Lower Basin tributaries to future Mexican obligations. Contemporaneous support for the inclusion of the tributaries in the Compact comes from the failure of amendments to the Boulder Canyon Project Act that would have exempted tributaries from the Mexican obligation. Moreover, Arizona's past conduct illustrates that the tributaries were intended to be included in the basin allocations. Arizona opposed ratification of the Colorado River Compact based on the inclusion of the tributaries in the Article III (c) surplus, and argued in *Arizona v. California* (1964) that Article III (b) was intended to compensate Arizona for the inclusion of the Gila River and other tributaries in the Compact.

The decision in *Arizona v. California* means that there may be no "surplus" water available to satisfy the Mexican Treaty obligation. State law governs the tributaries; and since they are not included in the Compact, they cannot be curtailed to meet Mexican delivery obligations. Eliminating the tributaries from the Lower Basin's apportionment forces the Upper Basin to bear a bigger relative burden than the Lower Basin in ensuring adequate deliveries.

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Further complicating the Upper Basin's position is that the Mexican Treaty obligation is the generally considered the first priority on the River. Any shortage on the Colorado River would mean that the Mexicans have the first call on the Colorado and the power to curtail both Upper and Lower Basin users.

The Upper Basin's burden would further increase if it were required to compensate for transit losses occurring between Lee Ferry and the Mexican border. The Lower Basin argues that the Upper Basin must deliver an amount of water equal to one half or more of the channel losses. However, the Compact negotiations do not suggest that this was the Commissioners' intention and the final Compact states that the Upper Basin "shall deliver at Lee Ferry" and not Yuma, as Lower Basin commissioners suggested. Accordingly, this suggests the Upper Basin is not required to compensate for channel losses during the driest stretch of the River – Lee Ferry to Yuma.

As a practical matter, the Upper Basin is not currently using its full apportionment, and so there have not been problems ensuring adequate deliveries to Mexico. However, as the Upper Basin continues to develop its water, and if climate change or drought further reduces flows, the chance for confrontation grows and the resolution of this ambiguity takes on increasing importance.

For further information on the Upper Basin's Mexican Treaty Obligation:

Arizona v. California, 373 U.S. 546, 559-60 (1963).

Carlson, J. 1989. *The Colorado River Compact: A Breeding Ground for International, National, and Interstate Controversies*, Natural Resources Law Center, University of Colorado School of Law.

Carlson, J. and Boles, A. 1986. *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins*, Rocky Mtn. Mineral Law Inst. Vol. 32, pp 21-1 to 21-68.

The Colorado River Compact Negotiation Transcripts
http://wwa.colorado.edu/colorado_river/cocmpct_trnscrpts.html

Getches, D. 1985. *Competing Demands for the Colorado River*, U. Colo. L. Rev. Vol. 56, pp. 413.

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Hundley, N., 2009. *Water and the West: the Colorado River Compact and the Politics of the American West (2nd ed.)*. University of California Press.

USBR. 2004. *Colorado River System: Consumptive Uses and Losses Report, 1996-2000*, Department of Interior.

What is extraordinary drought?

The term “extraordinary drought” is not defined in the 1944 Treaty with Mexico, nor is it defined in any parallel agreement. Article X of the 1944 Treaty provides that:

In the event of extraordinary drought or serious accident to the irrigation system in the United States, thereby making it difficult for the United States to deliver the guaranteed quantity of 1,500,000 acre-feet...a year, the water allotted to Mexico under subparagraph (a) of this Article will be reduced in the same proportion as consumptive uses in the United States are reduced.

The term “extraordinary drought” is also used in Article V of the 1944 Treaty, which provides for Mexican deliveries on the Rio Grande to users in the United States. There are, however, some differences between the use of extraordinary drought in Article X and Article V. Article X says that deliveries to Mexico will be decreased in proportion to consumptive use decreases in the United States. Article V permits Mexico to deliver less water for five years, but requires it to make up delivery deficiencies in the next five-year cycle. (The Treaty with Mexico, *supra*, Art. 5, Art. 10 (1944)).

During a prolonged drought in the 1990s, Mexico claimed extraordinary drought along the Rio Grande and failed to deliver sufficient water to irrigation districts in the United States. Mexico, under Article V, obtained the ability to make up deliveries in the next five-year period. Its invocation of extraordinary drought was controversial, as Texans reliant on the water claimed the basin’s growth in Mexico and Mexican storage of Rio Grande water was to blame instead of the drought. Similar disagreements are likely to occur should the U.S. declare extraordinary drought on the Colorado River.

In 2007, the seven basin states developed rules for shortage sharing and included a shortage schedule in the EIS that appealed to neither Mexico nor the United States. The proposed schedule is Appendix Q in the Interim Guidelines.

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The Interim Guidelines also hint to the procedures the United States would undertake should a shortage be declared on the Colorado River. If Lake Mead elevations are low enough to trigger shortages in Lower Basin deliveries, then the Secretary of the Interior will consult with the Department of State, the USIWBC, and the Basin States. These agencies would then determine whether and how the United States would reduce deliveries to Mexico consistent with the 1944 Treaty. If the elevation of Lake Mead falls below 1,000 feet, then the Secretary will consult with the Basin states representatives to determine further measures to be taken consistent with federal law.

The United States and Mexico are currently in talks to craft an agreement that develops a schedule of curtailments in times of shortage. These discussions will likely shed more light on the ambiguities in Article III (c), at least to when and how Mexican deliveries may be curtailed under the 1944 Treaty.

For further information on the definition of extraordinary drought:

Adler, R. 2008. *Revisiting the Colorado River Compact: Time for a Change?* Journal of Land, Natural Resources, and Environmental Law Vol. 28.

Getches, D. 1994. *The Law of the Colorado River in Coping with Severe Sustained Drought in the Southwestern United States, Phase II Report.*

Mission 2012: Clean Water. *International Cooperation*, Massachusetts Institute of Technology at
<http://web.mit.edu/12.000/www/m2012/finalwebsite/problem/international.shtml>

USBR. 2007. *Executive Summary, Final EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead*, Department of the Interior.

U.S. Water News, 2002. Online. *Satellite data show Mexico can no longer claim drought, researcher says* at
<http://www.uswaternews.com/archives/arcglobal/2satdat10.html>

The Equal Shares Theory (regarding the Interbasin Apportionment)

The purpose of the Colorado River Compact is to “provide for the equitable division and apportionment of the Colorado River System.” Controversy

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remains as to whether this equitable division was intended to guarantee equal shares to both basins, the so-called 'equal shares theory'. The original language, and source of confusion, in the 1922 Compact is as follows:

There is hereby apportioned from the Colorado River System in perpetuity to the Upper Basin and to the Lower Basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which now may exist.

The most significant effect of this ambiguity is on shortage sharing. From tree-ring reconstructions of average flow for the Colorado River, 15 maf is most likely higher than a long-term average. If the Colorado is apportioned into equal shares, each Basin has the same priority over water in times of shortage. If, however, the Colorado was not divided into equal shares, and the Lower Basin has a higher priority than the Upper Basin would be forced to curtail its uses before the Lower Basin in times of shortages.

Supreme Court decisions have framed the allocation made in the Compact. In *Kansas v. Colorado*, 206 U.S. 46 (1907), the Court announced the doctrine of equitable apportionment. The underlying rule was "equality of right," not necessarily "equality of amounts apportioned." (*Id.* (White, J., and McKenna, J., concurring)). In *Wyoming v. Colorado*, 259 U.S. 419 (1922), the Court held that the rule of prior appropriation applied to interstate stream allocations between two prior appropriation states. Lower Basin diversions have the earliest priority dates. As a result of these decisions, the Upper Basin states were concerned that their right to develop future water supplies would not be protected.

During compact negotiations, Delph Carpenter representing the state of Colorado, perhaps fearing these adverse consequences, offered a proposal based on a fifty-fifty allocation of water between the two basins based on the Colorado River's flows. At the time of his proposal, the needs of each Basin had been roughly calculated to be equal. This proposal preserved the right of the Upper Basin to develop in the future and provided the Lower Basin with ample current supplies. He hoped his formula would establish "a permanent and perpetual status" between the two Basins. Opposing this plan was W.S. Norviel from Arizona, who insisted on the Lower Basin receiving 82,000,000 acre-feet every ten years, while the Upper Basin states, led by Carpenter, refused to deliver more than 65,000,000 acre-feet every ten years.

Herbert Hoover, looking to compromise, urged "appropriations... be made in either division with equality of right as between them, up to a total of 7,500,000 acre-feet per annum, for each division." While this exact language was not used in the final version of the Compact, Hoover's statements coupled with those of other negotiators indicate that the two Basins intended

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to share at least base flow equally, and that these equal allocations would have equal priority between them.

Other language in the Compact further supports the concept of equal shares. The inclusion of Article III (b), as the sole exception to the equal division, emphasizes by negative implication that the commissioners intended to equally divide the Colorado River between the Basins. Furthermore, Article III (c) notes that when surplus water proves inadequate to satisfy Mexican delivery obligations, then the burden is to be “equally borne by the Upper Basin and the Lower Basin, and whenever necessary the States of the Upper Division shall deliver....water to supply one-half of the deficiency.”

The Compact, however, uses the term ‘equitable apportionment’, which is a legally defined term. Article I states the purpose of the Compact is to “provide for the equitable division and apportionment” of the Colorado River. The Commissioner’s use of this term could indicate that the allocation of the Colorado River is based on equality of right, instead of equality of flow. Similar terms used in Article III (f) and (g) further support the equality of right/equitable apportionment theory. Here the negotiators intended to provide guidance on future appropriations of the Colorado River. The Commissioners used the phrase “further equitable apportionment”, perhaps indicating that other provisions in the Compact were also based on the concept of equality of right. From a practical perspective, however, these equitable apportionment provisions are limited to future appropriations, and are unlikely to be invoked in a system that is already near shortage conditions. Accordingly, they are not necessarily inconsistent with the equal shares theory if they are limited to a future apportionment context.

The Compact itself has provisions that could support both theories, while the equal shares theory has its best support from the Compact negotiations. This ambiguity will only become more significant as demands meet, and possibly exceed available supplies, increasing the likelihood of shortages in either Basin.

For further information on the equal shares theory:

Carlson, J. and Boles, A. 1986. *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins*, Rocky Mtn. Mineral Law Inst. Vol. 32, pp 21-1 to 21-68.

The Colorado River Compact Negotiation Transcripts
http://wwa.colorado.edu/colorado_river/cocmpct_trnscrip.html

Hundley, N., 2009. *Water and the West: the Colorado River Compact and the Politics of the American West* (2nd ed.). University of California Press.

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McDonald, J. 1997. *The Upper Basins' Political Conundrum: A Deal is Not a Deal*, Department of the Interior, Report to the Western Water Policy Review Advisory Commission.

Tyler, D. 2003. *Silver Fox of the Rockies: Delphus Carpenter and Western Water Compacts*, University of Oklahoma Press: Norman.

The Upper Basin “Delivery Obligation”

One of the prominent ambiguities in the Compact that has been continually debated is whether the Upper Basin has an obligation to deliver the Lower Basins allocation or whether the Upper Basin simply has an obligation not to deplete the flow of the Colorado below the Lower Basins allocation. The original language, and source of confusion, in the Compact is as follows:

Article III (d) – The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of ten consecutive years reckoned progressive series...

From the language of the Compact and other Law of the River documents, most commentators have adopted the working assumption that Article II (d) operates as a delivery requirement in favor of the Lower Division states, not just a division of available water or obligation not to deplete. In practical terms, the Compact functions to ensure the Lower Basin receives at least 7.5 maf per year as well as any surplus, suggesting that the rights of the Lower Division states have a higher priority (seniority) than the rights of the Upper Division states. While the Compact does not explicitly discuss water rights seniority, the delivery requirement in Article III (d) couple with Article (c)'s provision that the Upper Division States also may not withhold water that cannot be reasonably used for agriculture or domestic uses from delivery to the Lower Division suggests that the Lower Division's rights are senior.

Later Federal legislation also supports a delivery obligation. Under the Colorado River Basin Project Act (1968), the Secretary of the Interior ensures adequate deliveries to the Lower Division through operation of Glen Canyon and Hoover Dams. Under section 602(a) the operating priorities of the Upper Basin reservoirs are: [1] the Upper Basin's delivery obligations to Mexico, [2] the Compact's requirements, and [3] additional releases to the Lower Division so long as they don't impair existing Upper Division consumptive uses. Under this Act and the Long Range Operating Criteria, the Secretary consistently directs releases of at least 8.23 maf of water from Lake Powell to ensure the Upper Division meets its delivery requirement. The operating criteria also established that under shortage conditions, the

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Secretary has the discretion to release less than 7.5 maf. This discretionary ability means that the Secretary could choose to satisfy Lower Division rights up to 7.5 maf before satisfying consumptive uses in the Upper Division. Water that could have been used in the Upper Division would be used instead for storage or satisfaction of 7.5 maf in the Lower Division in a time of drought. This discretion can be interpreted that drought conditions and decreased river flows exact a harsher burden on Upper Division states than Lower Division states.

Disagreement about this consistent release of 8.23 maf by the Secretary and the Upper Division's delivery obligation resurfaced during the Seven Basin States negotiations in 2005. The final agreement upheld the Upper Division's delivery requirement, but permitted the Upper Division to release less than 8.23 maf based on Lake Powell's status.

Some academic commentators, such as David Wegner and David Getches, also emphasize this delivery requirement, arguing that during times of drought or shortages the Upper Division cannot begin fulfilling post 1922 demands until the full Lower Division delivery obligations have been met. The delivery requirement highlights a tradeoff made in the Compact by each division. The Lower Division states gained assurances of a reliable water supply even though that security would limit long-term withdrawals. The Upper Division states gained assurance that the Lower Division had limits to their withdrawals, even though it meant the Upper Division assumed almost the entire risk of shortages during times of drought or low-flows.

Others argue, however, that there is only an obligation on the Upper Division states not to deplete the flow of the Colorado River by man-made diversions. For example, Eric Kuhn of the Colorado River District argues that nature's ability to cause the flow of the river to drop below 75 maf/10 years means that the Upper Division simply has an obligation not to deplete the flow through additional apportionments beyond 1922 levels. A similar argument is that the Compact was meant to equally divide the river between the two divisions, regardless of flow volume.

The "obligation not to deplete" interpretation does not enjoy the same level of institutional support as the "delivery obligation" interpretation. Furthermore, shifting management in compliance with an "obligation not to deplete" interpretation poses problems for users in the Lower Division who have developed a reliance in guaranteed deliveries of 7.5 maf from the Upper Division.

For further information on the Upper Basin delivery obligation:

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MacDonnell et al. 1994. *The Law of the Colorado River: Coping with Severe Sustained Drought* in Coping with Severe Sustained Drought in the Southwestern United States, Phase II Report.

Clyde, 1960. *Conflicts Between the Upper and Lower Basins on the Colorado River*, in Resources Development: Frontiers for Research, Western Resources Conference.

USBR, 2007. *Interim Guidelines for the Operation of Lake Powell and Lake Mead, Record of Decision*, Department of Interior.

Lord, W. et al. 1994. *Managing the Colorado River in a Severe Sustained Drought: An Evaluation of Institutional Options Using Simulation and Gaming* in Coping with Severe Sustained Drought in the Southwestern United States, Phase II Report.

Kuhn, E. 2007. *The Colorado River: The Story of a Quest for Certainty on a Diminishing River (Roundtable Edition)*, Colorado River Water Conservation Board.

Grant, D. 2003. *Interstate Water Allocation: When the Virtue of Permanence Becomes the Vice of Inflexibility*, U. Colo. L. Rev. Vol. 74, pp. 105-180.

Saunders, G. 1998. *Reflections on Sixty Years of Water Law Practice*, U. Den. Water L. Rev. Vol. 2, pp. 1.

Carlson, J. and Boles, A. 1986. *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins*, Rocky Mtn. Mineral Law Inst. Vol. 32, pp 21-1 to 21-68.

Compact Rescission or Reformation

Perhaps the most disconcerting of the potential legal conflicts are those that could result in Compact rescission or reformation. This line of thinking begins with the observation that the Colorado River Compact apportioned water to the Upper and Lower Divisions based on data from 1899 to 1920—an unusually wet period. This data prompted negotiators to believe the river featured an average virgin flow of (at least) 16.4 MAF per year. However, both measured flows and tree-ring data now suggest the actual average flow of the Colorado River is considerably less—probably no more than 15 MAF—and is likely to drop further due to climate change. As a result, the Colorado River is significantly over-allocated, a problem made worse by later commitments to apportion additional water in the Treaty with Mexico and by the Supreme Court’s decision to exclude Lower Basin tributaries from the

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basic apportionment. These inaccurate flow assumptions not only have serious consequences, but allocate most of those consequences to the Upper Basin.

While interstate Compacts are both statutes and contracts, courts have normally applied contract doctrine to resolve compact issues. Accordingly, there are two contract remedies available to the Upper Basin states: rescission (i.e., voiding) or reformation (i.e., altering) of the Compact based on mutual mistake. Rescission is possible only if the Upper Basin did not knowingly accept the risk of factual mistake; if they did, honoring the Compact would still be required. This determination may hinge on the interpretation of Article III(d) of the Compact (discussed above). If there is, in fact, a delivery requirement, then it seems to allocate the risk to the Upper Division. However, if it is an obligation not to deplete or is an expression of the equal shares theory, then perhaps it is less likely that this article expressly allocates the risk of mistake to the Upper Division, and rescission may thus be possible.

The second possibility that the Upper Basin bears the risk of the mistake is that it was aware that it had only limited facts at the time the Compact was made, but treated those facts as sufficient. The Compact negotiation transcripts and subsequent congressional testimony illustrate that nearly all representatives believed that they had sufficient information to apportion the river, and furthermore, believed that the Colorado River had more than 15 MAF of flow. While the Upper Basin negotiators treated their knowledge as sufficient, the fact that they were unaware that it was so biased brings into question if they knowingly accepted the risk of mistake in apportioning the Colorado River's flow in the Compact. Given these facts, there is a potential argument for Compact rescission based on mutual mistake; however, it is unlikely that the remedy would provide any real benefit to the Upper Basin. Since the Lower Division uses more water and has older water rights than the Upper Basin, voiding the Compact and equitably apportioning the Colorado River may be unlikely to benefit the Upper Division more than the current Colorado River Compact.

Reformation of the Compact to resolve some of legal ambiguities discussed may be another option for the Upper Basin if it is able to successfully argue that reformation should follow the Compact's approach of dividing the right to use water equally. Reformation due to mistake is only permitted when the mistake is to a reduction in writing or where the parties are mistaken as to the legal effect of the language used. There could be an argument that parties were mistaken as to the legal effect of some of the terms used—"equitable division" being an example. More problematic is the prohibition against reformation when third parties have relied on the contract in acquiring property interests. Since 1922, numerous water users in the Upper and Lower Basins have relied on the provisions in the Compact. This includes

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individual irrigators, municipalities, water supply companies, power companies, and recreational users, among others. Reformation to ensure equal shares would likely affect Lower Basin users more severely than Upper Basin users, and could unfairly affect the rights of third parties acting in reliance on the Compact's provisions.

Reformation of the Compact is theoretically possible using either congressional or judicial pathways. When Congress consents to an interstate compact, it presumably retains the right to revise or interpret the agreement. However, it is unlikely to do this in the absence of demonstrable injustice, and as the Upper Basin states are well aware, it is the Lower Basin that holds the political advantages associated with high populations, large economies, and vast congressional representation. Alternatively, the Supreme Court could address, under original jurisdiction, whether the Compact should be enforced when it produces such an unintended and inequitable result. Since the Court accepted the Compact's allocations in *Arizona v. California*, it would likely be very hesitant to modify the Compact. Still, the fact remains that the Colorado River Compact was a contract based on a factual error (about average flow volumes), an expectation (at least among some parties) of equal sharing, and an ignorance of climate change. The combined effect of these deficiencies, especially on the Upper Basin apportionment, may be too extreme to ignore. Additionally, a precedent for this type of action already exists: in *Texas v. New Mexico* (467 U.S. 1238 (1984)), the Supreme Court used contract law to change the flawed allocation formula in the Pecos River Compact.

For further information on Compact rescission or reformation:

Adler, R. 2008. *Revisiting the Colorado River Compact: Time for a Change?* Journal of Land, Natural Resources, and Environmental Law Vol. 28.

Carlson, J. and Boles, A. 1986. *Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins, Rocky Mtn. Mineral Law Inst.* Vol. 32, pp 21-1 to 21-68.

Getches, D. 1985. *Competing Demands for the Colorado River*, U. Colo. L. Rev. Vol. 56, pp. 413.

Grant, D. 2003. *Interstate Water Allocation: When the Virtue of Permanence Becomes the Vice of Inflexibility*, U. Colo. L. Rev. Vol. 74, pp. 105-180.

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Magnitude of Upper Basin Present Perfected Rights (PPRs)

Present Perfected Rights (PPRs) are the most senior water rights in the Colorado River Basin, and are not subject to curtailment during a Compact call. Lower Basin PPRs have been quantified (primarily in *Arizona v. California*), however, there remains some debate as the magnitude of Upper Basin Present Perfected Rights (PPRs). Part of the problem is the inadequacy of consumption records from the 1920s. However, there is also a legal issue; namely, are PPRs those with a priority date prior to the signing of the Colorado River Compact (November 24, 1922), or prior to the effective date of its ratification in the Boulder Canyon Project Act (June 25, 1929)? The Upper Colorado Basin Compact (1948) states that rights in the Upper Basin must have been perfected prior to November 24, 1922 (Upper Colorado Basin Compact, CRS 37-62-101(Art. IV)(c)). However, the Supreme Court in *Arizona v. California*, held that the PPRs in the Lower Basin include water appropriated prior to the adoption of the Boulder Canyon Project Act on June 25, 1929 (*Arizona v. California*, 547 U.S. 150, 154 (2006)). Two Upper Basin states, New Mexico and Utah, share Lower Basin tributaries, and were thus involved in the *Arizona v. California* litigation. For those states, it is unclear if their PPRs are determined by the 1922 or the 1929 dates. Most estimates place Upper Basin PPRs in the range of 2.1 to 2.3 million acre-feet (MAF).

For further information on Upper Basin PPRs:

Kuhn, E. 2007. *The Colorado River: The Story of a Quest for Certainty on a Diminishing River (Roundtable Edition)*, Colorado River Water Conservation Board.

Administration of Compact Calls

Under the prior appropriation system, when flows in a river are insufficient to satisfy all rights on the river, a senior appropriator will place a “call” on the river. This forces junior appropriators to stop diverting until the senior’s water right is satisfied. There are two possible types of interstate calls on the Colorado River, neither of which has ever happened: a Lower Basin call against the Upper Basin, and an intra-Upper Basin call amongst two or more Upper Basin states. A Lower Basin call would only occur when, due to nearly empty reservoirs and severe low flows in the Colorado River, the Upper Basin fails to meet either its Article III(d) flow requirements or its Article III(c) deliveries to Mexico. In an Upper Basin call, one Upper Basin state would make a call on another Upper Basin state, perhaps as part of efforts to comply with a Lower Basin call.

It is generally surmised that administration of a basinwide call would entail at least three contentious and phased efforts. First, a call between the Upper

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and Lower Basin would require an assessment of the magnitude and timing of downstream deliveries required to bring the Upper Basin back in compliance with the Compact. Second, a system of reservoir releases and user curtailments would need to be allocated among the Upper Basin states, presumably using the rules featured in the Upper Colorado River Basin Compact, as overseen by the Upper Colorado River Commission. And third, state water officials would need to devise and enforce curtailments within each state.

Every stage could be problematic and contentious. Determining whether or not the Upper Basin is out of compliance with the Compact is perhaps the most salient of the issues, as it could require resolution of several of the legal omissions and ambiguities already discussed. If there is any doubt among Upper Basin interests as to the validity of whether or not a Compact violation exists, Upper Basin water officials would likely be hesitant to implement a call. Should Upper Basin interests concede that an interbasin call is warranted, interpreting the language in the Upper Colorado River Basin Compact (UCRBC) then becomes a central issue. The most common interpretation is that any of the states that used, in the ten years prior to curtailment, more water than they were entitled to use under Article III of the Colorado River Compact must supply the quantity of such an overdraft to Lee Ferry before any other state faces curtailment. If there is no overdraft, then all states must deliver to Lee Ferry an amount of water proportional to their consumptive use in the preceding water year over total consumptive use in the Upper Basin. The alternate approach is to quantify curtailments based on apportionments. Under this interpretation, each state would curtail its use based on its percentage allocation in the UCRBC, not its consumptive use in the prior water year. The Commission has yet to formally endorse either interpretation, but is reviewing and establishing detailed procedures and policy for implementing a call. Regardless of the approach used, the magnitude of curtailments for each Upper Basin state must be sufficient to result in the required delivery to Lee Ferry. Once this step is completed, it is up to individual states to administer curtailments. In recent years, each Upper Basin state has been working to promulgate curtailment rules.

For further information on administration of Compact calls:

Hobbs, G. 2009. *Upper Colorado River Basin Compact: Sharing the Shortage*, Wyoming Lawyer Vol. 32, at http://wyomingbar.org/pdf/barjournal/barjournal/articles/Colorado_River.pdf (accessed June 15, 2010).

MacDonnell, L., D.H. Getches, and W.C. Hugenberg Jr. 1995. *The Law of the Colorado River: Coping with Severe Sustained Drought*. Water Resources Bulletin, 31:5(825-836), October.

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Tyrrell, P. 2008. *Colorado River Compact Administration Program: Consumptive Use Determination Plan*, Wyoming State Engineer's Office at http://seo.state.wy.us/PDF/CU_Plan_Final.pdf (accessed June 14, 2010).

How has the media been covering Colorado River issues?

For the past several decades there has been ongoing coverage of the various problems and threats to the Colorado River. Often this coverage has focused on individual threats, and has been lacking in national, mainstream media outlets. More recently, however, media coverage has increased and begun to look at the entire picture of threats to the Colorado River. This is most likely due, at least in part, to an improved understanding of various social, environmental, and climate related threats, such as the ongoing drought that has affected the entire Southwest since about 2000. Also, in the last ten years or so, more scientific research has been conducted into the potential impacts of a changing climate and warming Colorado River Basin on future river flows. Scientific tree-ring analyses have been conducted in recent years as well, which can reconstruct long-term flows for the Colorado. These studies indicate that the actual long-term average river flow may be well below the 20th Century average. Because of these issues, and including a few others such as continual population growth and energy development, some national news outlets have devoted serious attention to the Colorado River.

Some examples of mainstream and broad media coverage of prominent issues facing the Colorado River include:

New York Times *The Future is Drying Up* by Jon Gertner, October 2007
<http://www.nytimes.com/2007/10/21/magazine/21water-t.html? r=1>

National Geographic *The Drying of the West* by Robert Kunzig, February 2008
<http://ngm.nationalgeographic.com/2008/02/drying-west/kunzig-text>

The Economist *The drying of the West: The Colorado River and the civilization it waters are in crisis* January 2011
http://www.economist.com/research/articlesBySubject/displayStory.cfm?story_id=18013810&subjectID=348924

The above articles are examples of in-depth and extensive coverage of many issues facing the Colorado River. Other media coverage, however, does focus on individual issues in more local, everyday media outlets. Below are some examples of Colorado River issues and coverage of those issues through newspapers, magazines, blogs, radio shows, and other sources of media.

Lake Mead storage and pool elevation levels

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Many news agencies have paid attention to the fact that Lake Mead's pool elevation levels have been steadily declining since the turn of the 21st Century. The media attention was elevated in 2010, when Lake Mead's surface level dropped to an elevation not seen since the reservoir began filling in 1930's. Because many municipalities rely on Lake Mead for drinking water, several media outlets through out the Basin covered the dramatic decreases in elevation levels and subsequent possibility for shortages.

Some examples of media coverage regarding Lake Mead storage and pool elevation levels include:

The Arizona Republic *Lake Mead at 54-year low, stirring rationing fear* by Shaun McKinnon, August 2010

<http://www.azcentral.com/arizonarepublic/news/articles/2010/08/12/20100812lake-mead-low-water-level.html>

North County Times *Hoover Dam could stop generating electricity as soon as 2013, officials fear* by Eric Wolff, September 2010

http://www.nctimes.com/business/article_b7e44e9e-087d-53b2-9c49-7ea32262c9a9.html

New York Times *Water Use in Southwest Heads for a Day of Reckoning* by Felicity Barringer, September 2010

<http://www.nytimes.com/2010/09/28/us/28mead.html?hpw>

Proposed diversion and/or augmentation projects

Because of the controversial nature of diversion projects, they often gain media attention before any construction begins. Such projects, especially in the Colorado River Basin, often have stakeholders on both sides that vehemently defend their positions. Municipalities turn to such projects to ensure reliable water supplies for their constituents, which can benefit local communities. But there those who oppose such projects, arguing they will damage other communities, degrade ecosystems, and are only a temporary fix to the over-arching problem. Due to these controversies, there is often substantial news coverage of diversion and/or augmentation projects.

Some examples of media coverage regarding proposed diversion and/or augmentation projects include:

Denver Westword *There's a water war on the Colorado-Wyoming border, and Aaron Million is quick on the draw* by Joel Warner, November 2009

<http://www.westword.com/2009-11-26/news/there-s-a-water-war-on-the-colorado-wyoming-border-and-aaron-million-is-quick-on-the-draw/1/>

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Salt Lake Tribune *Pipeline controversy: Tapping the Green River* by Brett Prettyman, September 2010

<http://www.sltrib.com/sltrib/outdoors/50260217-117/river-green-gorge-pipeline.html.csp>

Deseret News *County needs Lake Powell pipeline by 2020, official says* by Nancy Perkins, February 2007

<http://www.deseretnews.com/article/660194053/County-needs-Lake-Powell-pipeline-by-2020-official-says.html>

Drought and/or climate change

The ongoing drought in the Colorado River Basin has brought to the media's attention the issue of drought and its impacts on water supplies in the West. Not only have reservoir levels dramatically decreased (due at least in part to drought), which have allowed for the iconic 'bath-tub ring' images of Lakes Mead and Powell, but water shortages and municipalities needing to reduce consumptive uses have occurred in the Basin. Couple the issue of drought with increased scientific research into climate change impacts on supply, and there is cause for concern, as the media has shown. Although a somewhat contentious issue, climate change negatively impacting Colorado River flows has been covered by numerous media outlets.

Some examples of media coverage regarding drought and/or climate change include:

New York Times *An Arid West No Longer Waits for Rain* by Randal C. Archibold and Kirk Johnson, April 2007

<http://www.nytimes.com/2007/04/04/us/04drought.html>

CNBC *Water Crisis Hits Western Cities and States* by Molly Mazilu, September 2010

<http://www.cnbc.com/id/39397641>

National Public Radio *Colorado River's Low Water Has Far-Reaching Effect* by Elizabeth Shogren, February 2007

<http://www.npr.org/templates/story/story.php?storyId=7532249>

The Huffington Post *More Water Shortages Coming to the West* by Mike Stark, December 2008

http://www.huffingtonpost.com/2008/12/05/more-water-shortages-comi_n_148670.html

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Climate Central *Running Toward Empty? Part I and II* by Tom Yulsman and
Brendon Bosworth, January 2011

<http://www.climatecentral.org/news/running-toward-empty/>