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Water Can Be for Drinking Again: Economic and Collaborative Solutions to a Texas Water Fight.

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COMMENT

WATER CAN BE FOR DRINKING AGAIN: ECONOMIC AND COLLABORATIVE SOLUTIONS TO A TEXAS WATER FIGHT

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I. INTRODUCTION

Texas is facing one of the worst droughts in state history.[1] The unparalleled water shortage has created a fierce and acrimonious water-rights conflict—pitting downstream rice farmers in South Texas against upstream domestic users in the Highland Lakes Region and the City of Austin.[2] The ongoing drought, coupled with increasing demand, highlights concerns that there may not be enough water for everyone.[3] For the second consecutive year, the Lower Colorado River Authority (LCRA) did not release Highland Lakes water that is normally sent to South Texas rice producers for irrigation.[4]

LCRA is a legislatively created conservation and reclamation district that manages water supplies for municipal, domestic, agricultural, and industrial users along the Lower Colorado River.[5] Under its authority, LCRA sells water to its customers under either "firm" or "interruptible" contracts.[6]

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1. *See* Chris Amico, Danny DeBelius, Terrence Henry & Matt Stiles, *Dried Out, Confronting the Texas Drought*, STATEIMPACT TEXAS, http://stateimpact.npr.org/texas/drought/ (last visited Oct. 17, 2013) (surveying the current drought and its impact on Texas).

2. *See* Terrence Henry, *LCRA Passes New Water Plan: More Water for Lakes, Less for Farming*, STATEIMPACT TEXAS (Feb. 22, 2012, 3:49 PM), http://stateimpact.npr.org/texas/2012/02/22/lcra-passes-new-water-plan-more-water-for-lakes-less-for-farming/ (noting the current dispute).

3. *See Texas Drought*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/drought/index.html (last visited Oct. 18, 2013) (insinuating that without precautions, drastic water shortages could occur); *see also* Joshua Fetcher, *Statewide Water Shortage Threatens Texas Economy, Population Growth*, THE DAILY TEXAN (Apr. 5, 2013, 8:57 AM), http://www.dailytexanonline.com/news/2013/04/05/statewide-water-shortage-threatens-texas-economy-population-growth (addressing the impact of the drought on Texans).

4. *See Texas Drought*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/drought/index.html (last visited Oct. 17, 2013) (stating that water was withheld for the past two years).

5. *See ABCs of LCRA*, LOWER COLO. RIVER AUTH., http://www.lcra.org/about/overview/index.html (last updated Jan. 25, 2013, 5:03 PM) (explaining LCRA's role). In Texas, surface water belongs to the people, but is held in trust by the state. TEX. WATER CODE ANN. § 11.0235(a) (West Supp. 2012). The Texas Commission on Environmental Quality (TCEQ) issues permits for water use. *Id.* § 11.0235(c). The TCEQ is Texas's environmental agency and is responsible for the protection of the state's "public health and natural resources consistent with sustainable economic development." *About the TCEQ*, TCEQ.TEXAS.GOV, http://www.tceq.texas.gov/about/ (last visited Oct. 17, 2013) (providing general information on the entity).

6. *See Water Supply Contracts*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/contracts/index.html (last visited Oct. 17, 2013) (discussing firm contracts); *see also Water Supply*,

The LCRA, along with water supply experts and regional stakeholders, creates "water management plans" (WMPs) to properly conserve and apportion water.[7] The Texas Commission on Environmental Quality (TCEQ) reviews, approves, and amends the WMPs along the Lower Colorado River.[8]

Under normal conditions, lake levels are checked once per year to determine if there is enough water to send to rice farmers downstream.[9] "Trigger points" refer to the lake levels at which lake water may be cut off for interruptible agricultural customers.[10] Under "an emergency drought relief order requested by the LCRA and approved by the Texas Commission on Environmental Quality," the trigger point for the Highland Lakes region occurs when the combined levels of Lakes Travis and Buchanan fall below 850,000 acre-feet.[11] On February 13, 2013, the combined levels of Lakes Travis and Buchanan fell to 822,782 acre-feet, and water to downstream rice farmers was cut off.[12]

"Rice farming and other agricultural operations are a critical part of the economy in the Gulf Coast Region of Texas."[13] Texas ranks among the nation's six largest rice producers, and most of that rice is grown along the Lower Colorado River.[14] Because rainfall is unreliable and often insufficient, Highland Lakes' irrigation water is critical to production.[15]

TCEQ allocates water permits based on a prior appropriation regime: the first entity to make beneficial use of groundwater obtains first priority

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LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/ index.html (last updated June 14, 2013, 8:33 AM) (surveying interruptible contracts).

7. *Water Supply*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/index.html (last updated June 14, 2013, 8:33 AM) (stating the purpose and role of water management plans).

8. *See LCRA Updating Water Management Plan for Highland Lakes*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/wmp.html (last updated July 26, 2013) (outlining the role of the TCEQ in the LCRA's water plans).

9. *See* Mose Buchele, *LCRA Set to Get an Earful on Water Management Plan*, STATEIMPACT TEXAS (Feb. 20, 2012, 8:18 PM), http://stateimpact.npr.org/texas/2012/02/20/lcra-set-to-get-and-earful-on-water-management-plan (explaining the usual procedure).

10. *See Most Downstream Farmers Will Not Receive Highland Lakes Water This Year*, LOWER COLO. RIVER AUTH. (Mar. 2, 2013, 1:00 AM), http://www.lcra.org/newsstory/2013/farmershlwater.html (discussing trigger points).

11. *See id.* (providing the water-level cut off).

12. *See, e.g.*, *TCEQ Approves Emergency Drought Relief*, LOWER COLO. RIVER AUTH. (Feb. 13, 2013, 4:00 PM), http://www.lcra.org/featurestory/2011/droughtreliefmeasures.html (reporting on the emergency relief).

13. *Agricultural Irrigation*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/irrigation.html (last updated Dec. 12, 2012).

14. *Id.* (finding Texas to be important in domestic rice production).

15. *Id.* (noting the importance of irrigation water).

to that groundwater ahead of all subsequent users.[16] The Texas Rice Producers' Legislative Group (Rice Producers Group) argues its members have a right under Texas's statutory prior appropriation scheme based on the claim that they began appropriating Lower Colorado River water approximately 40 years before the creation of the Highland Lakes region (Highland Lakes).[17] However, according to the LCRA, despite the fact that rice farmers are prior appropriators, its "practice of making interruptible stored water from the Highland Lakes available to downstream rice farmers—a water supply that can be cut back or cut off in a severe drought—is consistent with the Texas Legislature's directive."[18] The veracity of these statements are outside the scope of this Comment, but an understanding of prior appropriation will assist in the later discussion of the efficiencies and inefficiencies of the system.

Meanwhile, Highland Lakes residents and business owners fear for their futures because of the drought.[19] Residents struggle with rampant job loss and bankruptcy because of the drought's impact on local businesses.[20] In response to such economic hardship, they are advocating for changes in the use and purchase of water from the Lower Colorado River.[21]

The conflict facing the Rice Producers Group and Highland Lakes is extremely complex and delicate. The LCRA's decision to cut off water to rice producers may indeed protect its municipal and industrial customers, but it achieves this only by bringing an important Texas industry to the

16. *See* United States v. City of Las Cruces, 289 F.3d 1170, 1177 (10th Cir. 2002) (announcing that Texas adopted a prior appropriation scheme); *Permit Types*, TEX. COMM'N ON ENVTL. QUALITY, http://www.tceq.texas.gov/permitting/air/titlev/permit_types.html (last visited Oct. 17, 2013) (illustrating the permits that the TCEQ issues).

17. *See* Letter from Edmond R. McCarthy, Jr., Attorney, Jackson, Sjoberg, McCarthy & Townsend, LLP, to Tex. Comm'n for Envtl. Quality (Apr. 30, 2012) (on file with STATEIMPACTTEXAS.COM), *available at* http://www.documentcloud.org/documents/358419-tecq-ltr-4-30-12.html#document/pl (arguing for the Rice Producers Group).

18. *Agricultural Irrigation*, LOWER COLO. RIVER AUTH., http://www.lcra.org/water/supply/irrigation.html (last updated Dec. 12, 2012).

19. *See* Terrence Henry, *Few Satisfied with New LCRA Water Plan*, STATEIMPACT TEXAS (Feb. 22, 2012, 10:14 AM), http://stateimpact.npr.org/texas/2012/02/22/few-satisfied-with-new-lcra-water-plan/ (highlighting the concerns of Highland Lakes' residents).

20. *See id.* (facing the hardship resulting from the drought); *accord* Krista Umscheid-Ramirez, *Water Levels Directly Impact Highland Lakes Tourism*, LOWER COLO. RIVER AUTH., http://www.lcra.org/featurestory/2011/h20levelsimpacttourism.html (last visited Oct. 17, 2013) (noting that some Highland Lakes businesses reported drops of as much as 40% in business during the drought, and one businessman reported a loss of $130,000 in revenue in a single year).

21. *See* Terrence Henry, *Few Satisfied with New LCRA Water Plan*, STATEIMPACT TEXAS (Feb. 22, 2012, 10:14 AM), http://stateimpact.npr.org/texas/2012/02/22/few-satisfied-with-new-lcra-water-plan/ (discussing the desire for change).

brink of potential destruction. Part II of this Comment analyzes the dispute between the Highland Lakes and the Rice Producers Group by applying economic theories and principles in the hope of finding a more equitable and economically efficient resolution that allows all users to survive. Part III of this Comment examines the agreements between several Western states that reached unprecedented levels of cooperation and collaboration in solving their own water crises. Many elements of these agreements could be instrumental in resolving the current dispute before the parties resort to expensive litigation or before the South Texas rice industry dries up.

First, a brief primer on Texas water allocation laws and doctrines will clarify the need for a drastic change in the traditional water-transfer process.

II. LEGAL BACKGROUND

On April 26, 2012, an attorney representing the Colorado Water Issues Committee and the Rice Producers Group sent a letter providing comments and suggestions to the TCEQ regarding the 2012 WMP.[22] The letter raised an interesting point that necessitates a brief analysis. The Rice Producers Group asserted that "[c]urtailment of the ratoon crop outside of a curtailment period is inconsistent with state law."[23] A brief discussion of the Texas Water Code will help the reader understand why the rice producers' argument is unlikely to assist their attempt to obtain surplus water from the Highland Lakes, and why an alternative resolution to the current dispute is necessary.

A. *The Texas Constitution and the Texas Water Code*

The Texas Constitution and Texas Water Code promote water conservation and attempt to efficiently balance competing water uses.[24] Article XVI, Section 59 of the Texas Constitution states that it is in the public interest to protect and develop water for all useful purposes,

22. Letter from Edmond R. McCarthy, Jr., Attorney, Jackson, Sjoberg, McCarthy & Townsend, LLP, to Tex. Comm'n for Envtl. Quality (Apr. 30, 2012) (on file with STATEIMPACTTEXAS.COM), *available at* http://www.documentcloud.org/documents/358419-tecq-ltr-4-30-12.html#document/p1.

23. *Id.* A "ratoon" crop is a "new crop (especially of rice, bananas, or sugar cane) that grows from the stubble of the crop already harvested." *Ratoon Definition*, OXFORD DICTIONARIES.COM, http://oxforddictionaries.com/definition/english/ratoon-crop?q=ratoon+crop (last visited Aug. 1, 2013).

24. *See* TEX. CONST. art. XVI, § 59(a) (providing for the protection of natural resources); TEX. WATER CODE ANN. § 11.0235(e) (West Supp. 2012) (noting the import of protecting water sources).

including conservation, irrigation, and agricultural uses.[25] Section 11.0235(a) of the Water Code states that "the waters of the state are held in trust for the public and the right to use state water may be appropriated only as expressly authorized by law."[26] Further, section 11.0235(c) requires that "all permit conditions relating to freshwater inflows to affected bays and estuaries and instream flow needs must be subject to temporary suspension if necessary for water to be applied to essential beneficial uses during emergencies."[27] Most importantly, section 11.0235(e) states:

> The fact that greater pressures and demands are being placed on the water resources of the state makes it of paramount importance to ensure that these important priorities are effectively addressed by detailing how environmental flow standards are to be developed . . . specifying in clear delegations of authority how those environmental flow standards will be integrated into the regional water planning and water permitting process.[28]

Therefore, the WMP provision prohibiting release of the surplus water is in line with the purpose of both the Texas Constitution and the Water Code.

The rice producers will find it difficult to assert a preferential right to the surplus water. In its letter to the TCEQ, the Rice Producers Group frequently stated that the new WMP unlawfully prioritized the recreational and aesthetic uses of the Highland Lakes above the agricultural needs of those downstream.[29] Should the Highland Lakes be imprudent enough to assert only a recreational use of the surplus water, the Rice Producers Group would likely be correct that such prioritization would be

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25. TEX. CONST. art. XVI, § 59(a) (creating the foundation for conservation, production, and protection of Texas's natural resources).

26. WATER § 11.0235(a).

27. *Id.* § 11.0235(c); Emily Howell, Comment, *Is the TCEQ "Hearing" Impaired?: The Impact of* City of Marshall v. City of Uncertain *on the Availability of Contested-Case Hearings for Water Use Permit Amendments*, 8 TEX. TECH ADMIN. L.J. 299, 304 (2007) (explaining that surface water rights are property rights in Texas, the legislature codified these rights in Chapter 11 of the Texas Water Code, and the TCEQ's duty is to regulate and appropriate the rights to surface water).

28. WATER § 11.0235(e). The Texas Water Code only allows for the appropriation of state water when such use is "expressly authorized" by the TCEQ. *See generally* Suzanne Schwartz, *Whiskey is for Drinking, Water is for Fighting: A Texas Perspective on the Issues and Pressures Relating to Conflicts over Water*, 38 TEX. TECH L. REV. 1011, 1019 (2006) (lamenting that the Texas courts have not yet fully defined "expressly authorized").

29. *See* Letter from Edmond R. McCarthy, Jr., Attorney, Jackson, Sjoberg, McCarthy & Townsend, LLP, to Tex. Comm'n for Envtl. Quality (Apr. 30, 2012) (on file with STATEIMPACTTEXAS.COM), *available at* http://www.documentcloud.org/documents/358419-tecq-ltr-4-30-12.html#document/p1 (arguing that using water to fill a lake is not a beneficial use).

unlawful.[30] From a pragmatic standpoint, Highland Lakes should assert a domestic and municipal use to fall within the statutory appropriation preferences outlined under chapter 11 of the Water Code.[31] The list of preferential uses mandates conservation and proper utilization of state water and requires that water be apportioned in accordance within an enumerated preferential order.[32] At the top of this list are domestic and municipal uses,[33] followed immediately by agricultural and industrial uses.[34] Recreational uses are the last of the enumerated preferential uses.[35] Even without knowledge of this specific provision, it is difficult to imagine Highland Lakes arguing that recreational or aesthetic uses should take priority over agricultural uses in the midst of an historic drought.

The Water Rights Adjudication Act's statement of policy notes: "conservation and best utilization of water resources of this state are a public necessity."[36] The state, in the best interest of the public, administers water rights of surface-water resources to maximize beneficial use.[37] The policy statement concludes that the Water Rights Adjudication Act was drafted in response "to the mandate expressed in Article XVI, Section 59 of the Texas Constitution."[38] Because Article XVI, Section 59 of the Texas Constitution contemplates conservation and development of water resources,[39] and the Water Rights Adjudication Act was drafted

30. *See, e.g.*, WATER § 11.024 (West 2008) (naming the section "Appropriation: Preferences").

31. *See generally id.* (favoring certain uses over others).

32. *Id.* (setting the order for appropriation rights).

33. *See id.* § 11.024(1) (designing the list to "benefit the greatest number of people").

34. *Id.* § 11.024(2) ("[A]gricultural uses and industrial uses, which means processes designed to convert materials of a lower order of value into forms having a greater usability and commercial value, including the development of power by means other than hydroelectric.").

35. *Id.* § 11.024(6); *see also* Lower Colo. River Auth. v. Tex. Dep't of Water Res., 638 S.W.2d 557, 573 (Tex. App.—Austin 1982) (surveying the legislative intent behind this section, the court found that section 11.024 gives first preference to "domestic and municipal uses," and that section 11.027 creates the "first in time, first in right" doctrine, but that section 11.028 creates an exception to that doctrine "in favor of cities and towns, allowing them to make 'further appropriation' for domestic or municipal uses"), *rev'd*, 689 S.W.2d 605 (Tex. 1984). The court further stated that the "preferences listed in [section] 11.024 are categorized, and assigned priority, based not upon the nature or character of the holder of the water right, but based upon the use of the water, domestic and municipal uses being the first preference." *Lower Colo. River Auth.*, 638 S.W.2d at 574.

36. WATER § 11.302 (West 2008).

37. *See generally id.* (declaring the policy behind the regulations).

38. *Id.*; *In re* Adjudication of Upper Guadalupe River Segment of Guadalupe River Basin, 625 S.W.2d 353, 364 (Tex. Civ. App.—San Antonio 1981) (upholding the constitutionality of section 11.302, the court held that water rights may be reasonably regulated, but recognized that the rights of one "shall not be injurious to the equal rights of others entitled to the equal privilege of using water from the same source"), *aff'd*, 642 S.W.2d 438 (Tex. 1982).

39. *See* TEX. CONST. art. XVI, § 59(a) (emphasizing both conservation and development).

with the intent of following Article XVI, Section 59,[40] it follows that under Texas law, the rice producers would be unable to assert a statutory right to the Highland Lakes water surplus.

The Supreme Court of Texas recently held that water regulation "is essentially a legislative function," and the regulations must be "rationally related to legitimate state purposes" to meet constitutional requirements.[41] The court later reaffirmed that the responsibility lies with the Texas Legislature to regulate natural resources.[42] It stated, "the people have constitutionally empowered the Legislature to act in the best interest of the State to preserve our natural resources, including water."[43]

Given the grave importance of the current dispute and the likely failure of case and statutory law to aid the rice producers, it is imperative that the parties explore alternative resolutions to the conflict. There is a growing body of literature analyzing water disputes through the lens of economic principles and theories. Several jurisdictions in the United States, and some overseas, established experimental water allocation schemes with unprecedented success. The following sections will consider the current dispute between Highland Lakes and the Rice Producers Group through these economic theories and experimental schemes.

III. ECONOMIC THEORIES

A. *The Coase Theorem*

The "first in time, first in right" model is the traditional model of water appropriation in Texas and many other United States jurisdictions.[44] The "first in time, first in right" model is a common law way of apportioning water rights based on the principle that the first user to make productive use of the water should have paramount rights to the resource over all

40. WATER § 11.302.

41. *See, e.g.*, Barshop v. Medina Cnty. Underground Water Conservation Dist., 925 S.W.2d 618, 633 (Tex. 1996) (expounding upon the Texas Legislature's ability to regulate water resources whether it be surface water or groundwater).

42. *See* Sipriano v. Great Spring Waters of Am., Inc., 1 S.W.3d 75, 77 (Tex. 1999) (identifying the role of the legislature).

43. *Id.* at 79.

44. *See* WATER § 11.302 ("As between appropriators, the first in time is the first in right."); Stephanie Lindsay, Comment, *A Fight to the Last Drop: The Changing Approach to Water Allocation in the Western United States*, 31 S. ILL. U. L.J. 689, 692 (2007) (citing NORRIS HUNDLEY, JR., THE GREAT THIRST: CALIFORNIANS AND WATER: A HISTORY 69–75 (U. of Cal. Press) (2001) (discussing the history of the "first in time, first in right" principle)).

other appropriators.[45] However, this model and most other statutory transfer schemes have the propensity to create waste and inefficient allocation of water.[46] In fact, many of the elements of traditional water transfer processes are highly wasteful.[47] The Rice Producers Group and the Highland Lakes should endeavor toward an allocation scheme that will produce the most economically-efficient allocation of the surplus water.

An economically-efficient outcome can be measured in a number of ways, but this Comment will focus primarily on theories based on Professor Ronald H. Coase's theory of social costs, known as the Coase Theorem.[48] The primary objective of the Coase Theorem is to reach the most efficient allocation of resources with limited judicial and governmental involvement.[49] The basic elements of the Coase Theorem can be summarized as follows: when transaction costs are low or at zero, the initial assignment of a property entitlement is irrelevant because negotiations will lead to the most efficient allocation of resources.[50]

When transaction costs are prohibitive to a bargain, Coase proposed two alternatives: first, the creation of a firm (a collective of similarly

45. *See* United States v. City of Las Cruces, 289 F.3d 1170, 1177 (10th Cir. 2002) (categorizing Texas as a "first in time, first in right"); Bartley v. Sone, 527 S.W.2d 754, 759 (Tex. Civ. App.—San Antonio 1974, writ ref'd n.r.e.) (categorizing the law in Texas as prior appropriation); Biggs v. Miller, 147 S.W. 632, 636 (Tex. Civ. App.—El Paso 1912, no writ) ("We understand the law to be in this state that riparian lands . . . have equal rights to a reasonable use of the water[,] that nonriparian lands acquire rights to water by statutory appropriation[,] and that as between appropriators the first in time is first in right . . . ."); *see also* State v. Hidalgo Cnty. Water Control and Imp. Dist. No. 18, 443 S.W.2d 728, 737–38 (Tex. Civ. App.—Corpus Christi 1969, writ ref'd n.r.e.) (reciting a brief history of Texas's prior appropriation scheme while noting specifically under Texas's first appropriation laws, priority in water rights were established by the first person who diverted a stream, put it to beneficial use, and filed an affidavit with the county clerk).

46. *See* C. Carter Ruml, *The Coase Theorem and Western U.S. Appropriative Water Rights*, 45 NAT. RESOURCES J. 169, 173 (2005) (arguing that the "first in time first in right" model leads to a "race to the resource" scenario in which the first user of the water is not necessarily the one who will put it to its most economically efficient use, thus creating waste).

47. *See id.* (presenting a thorough outline of the administrative and transaction costs of traditional water transfer—including transfer protests and legal costs).

48. *See generally* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 1–44 (1960) (creating what is now called the Coase theorem); David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 8 (1990) (explaining the Coase Theorem is the basis for virtually all law and economics theory).

49. *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 1–2 (1960) (summarizing the purpose of the theorem).

50. *See id.* (establishing the basic principles behind the theorem); *see also* Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 713, 732 (1996) (suggesting when a party is determining whether to cause harm and when the parties have a low-cost opportunity to deal, the Coase Theorem would allow the parties to make a "mutually desirable agreement in incorporating the optimal result").

interested individuals),[51] and second, if the costs of organizing or maintaining the firm are too high, Coase argued for judicial or state intervention (i.e., the court system).[52] Because an individual rice farmer would likely lack the resources to bargain with the Highland Lakes monolith (and vice versa), the Coase Theorem suggests that individual farmers should pool their resources to create a firm capable of meeting the costs of negotiating.[53]

The Rice Producers Group and Highland Lakes are both Coasean firms.[54] The Highland Lakes represents thousands of residents, businesses, and employees—each with their own concerns and economic abilities.[55] Similarly, the Rice Producers Group is a collective of farmers and farm workers who all have a unique stake in the outcome of the dispute, but who may have limited economic power individually.[56]

1. Transaction Costs

Reaching an efficient allocation of resources requires the transaction costs of making the transfer to be less than the benefits each party will receive.[57] Transaction costs are the costs associated with creating a bargain.[58] In Coasean terms, the transaction costs must be low or at zero

51. R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 16 (1960) (opining the firm is "an alternative to organizing market transactions" when the negotiation costs to an individual are too great).

52. *See id.* at 17 (advocating for intervention when maintenance costs are too high).

53. *See id.* at 16 (1960) (advancing the idea of when an individual cannot afford to bargain alone, it is better to join a group).

54. *See id.* ("Owners of . . . several adjoining properties in a given area may act much in the same way.").

55. *See generally* Terrence Henry, *Few Satisfied with New LCRA Water Plan*, STATEIMPACT TEXAS (Feb. 22, 2012, 10:14 AM), http://stateimpact.npr.org/texas/2012/02/22/few-satisfied-with-new-lcra-water-plan/ (stating that The Central Texas Water Coalition represents many Highland Lakes' businesses and residents).

56. Letter from Edmond R. McCarthy, Jr., Attorney, Jackson, Sjoberg, McCarthy & Townsend, LLP, to Tex. Comm'n for Envtl. Quality (Apr. 30, 2012) (on file with STATEIMPACTTEXAS.COM), *available at* http://www.documentcloud.org/documents/358419-tecq-ltr-4-30-12.html#document/pl (pointing out that the Texas Rice Producers Legislative Group consolidates the interests of many of the rice producers).

57. *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15 (1960) (noting if transactions are costless, rights will be rearranged "if it would lead to an increase in the value of production").

58. *Id.* at 15–16 (reviewing transaction costs in markets); *see also* Clyde O. Martz & Bennett W. Raley, *Administering Colorado's Water: A Critique of the Present Approach*, *in* TRADITION, INNOVATION AND CONFLICT: PERSPECTIVES ON COLORADO WATER LAW 41, 41 (1986) ("The usufructuary nature of the right necessarily exposes all water rights to diminution by the wrongful acts of others. This potential for injury can only be prevented by the constant supervision or administration of every water right in a given basin.").

in order to establish an efficient allocation of resources.[59] If these transaction costs are too high, an otherwise beneficial bargain will be left on the table.[60]

The formation of firms can raise the transaction costs of negotiation.[61] Transaction costs frequently preventing efficient bargains are "holdouts" and "free-riders" or "freeloaders."[62] The holdout problem occurs when a seller in the negotiation holds out for an unreasonably high price; thus, stalling the process and increasing transaction costs.[63] In a hypothetical market-based exchange, if a significant faction of the Highland Lakes firm refused to sell the surplus water at a reasonable price, the cost of negotiations would increase and the bargaining process would be stalled indefinitely.[64] Free-riders want the benefits of the desired outcome, but will not expend their own resources to acquire them.[65] The free-rider problem emerges when a collective successfully obtains a right, which benefits all, but only those in the collective must pay.[66] The significance of the holdout and free-rider transaction cost problems will be especially important in the discussion of Calabresi and Melamed's "Cathedral" model below.

2. Efficient Bargaining

Under certain conditions of the 2012 WMP, a diversion of surplus water in Lake Travis and Lake Buchanan cannot occur if lake levels drop below

59. *See* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 15–16 (1960) (urging that transaction costs must be low in order to incentivize activity).

60. *See id.* at 16 (demonstrating a certain "arrangement of rights may bring about a greater value of production than any other[;]" however, if the arrangement of rights is not "established by the legal system, the costs of reaching the same result by altering and combining rights through the market may be so great that this optimal arrangement of rights, and the greater value of production which it would bring, may never be achieved").

61. *Id.* at 17 (asserting firm transaction costs may be high).

62. *See generally* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1107 (1972) (discussing the frequent problems associated with holdouts and freeloaders).

63. *See, e.g.*, Troy A. Rule, *Shadows on the Cathedral: Solar Access Laws in a Different Light*, 2010 U. ILL. L. REV. 851, 885 (2010) (showing how holdouts increase transaction costs).

64. *See id.* (explaining that a holdout exists when a party refuses to sell its entitlement "at a reasonable price in hopes of extracting additional wealth from the transaction," which will "reduce the likelihood of successful Coasean bargaining").

65. Joseph W. Dellapenna, *The Importance of Getting Names Right: The Myth of Markets for Water*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 317, 330–31 (2000) (describing the actions of freeloaders).

66. *See id.* (drawing an analogy to air pollution). In this example, Professor Dellapenna explains that free-riders benefit from the improved air quality created by other people's investment in fuel-efficient vehicles without actually purchasing a fuel-efficient vehicle themselves. *Id.*

certain "trigger points."[67] Assuming both Highland Lakes and the Rice Producers Group value the water in Lake Travis and Lake Buchanan (and that transaction costs are low),[68] the Coase Theorem seeks to determine, using market principles, which party values the water more; and therefore, is willing to pay for the surplus.[69] Suppose the Highland Lakes values the surplus water at $1 million per annum, but the Rice Producers Group valued the same water at $1.2 million.[70] The Highland Lakes would be willing to sell for any price above $1.2 million, and the Rice Producers Group would be willing to purchase the water for any price below $1.2 million.[71] If an agreement is reached between the parties, the water goes to the party who values it most, and will put it to its highest beneficial use.[72]

67. LOWER COLO. RIVER AUTH., LAKES BUCHANAN AND TRAVIS: WATER MANAGEMENT PLAN AND DROUGHT CONTINGENCY PLANS (Feb. 2012), *available at* http://www.lcra.org/library/media/public/docs/water/wmp/ExhibitA_ProposedWMP_with_Appendices_Mar2012.pdf (outlining when surplus water may be diverted).

68. *See* Mose Buchele, *With a Letter to the TCEQ, the Battle for Colorado River Water Is Rejoined*, STATEIMPACT TEXAS (May 23, 2012, 6:10 AM), http://stateimpact.npr.org/texas/2012/05/23/with-a-letter-to-the-tceq-the-battle-for-the-colorado-river-water-is-rejoined (balancing the Highland Lakes user's need for the water in sustaining their local economies and lifestyles with the rice producers' desire for the water to produce biannual crops).

69. *See, e.g.*, Robert C. Ellickson, *The Case for Coase and Against "Coaseanism"*, 99 YALE L.J. 611, 613 (1989) (citing R. COASE, THE FIRM, THE MARKET, AND THE LAW 115, 133, 175–76 (1988)) ("[T]he conferral of a legal entitlement may affect the allocation of resources . . . when the transaction costs of transferring the entitlement to a person who values it more highly would exceed the gains from that trade . . . .").

70. *See* JEFFERY L. HARRISON, LAW AND ECONOMICS IN A NUTSHELL 77–80 (5th ed. 2011) (using a hotel dispute to show the principles at hand). The figures presented in no way represent the current market value of any surplus water and are only used for simplification purposes.

71. *See id.* (explaining how parties value interactions). This example would be considered a Pareto superior efficiency outcome. Gary Lawson, *Efficiency and Individualism*, 42 DUKE L.J. 53, 85 (1992) (suggesting that Pareto superiority—"[a] change or action . . . mak[ing] at least one person better off by his own standards and no one worse off by her own standards"— is the most socially, morally, and economically desired outcome). The lower and less desirable efficiency outcome is Pareto optimality. *See* Kevin L. Brady, *An Economic Review of Inefficiency in Utah Groundwater Law: Cache County Emphasis*, 38 ENVTL. L. REP. 10021, 10022 (2008) ("[D]istribution of groundwater is efficient if all other groundwater allocations result in at least one person experiencing a lower level of satisfaction. This state of efficiency is called Pareto optimality.").

72. *See* Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 689–90 (1988) (detailing how the party who values the resource the most in the bargaining process will put it to its highest beneficial use).

B. *Water Markets*

The implementation of water markets tested the viability of the Coase Theorem.[73] Scholars and resource economists suggested that "water can be managed in a more productive and efficient manner when treated as a 'tradable standardized commodity' rather than as a product of engineering or an integral part of nature."[74] The ultimate goal of a water market is to create a system governed by economic rules rather than solely through government regulation.[75] Theoretically, water markets determine the true economic value of water—ensuring the water is put to its most efficient, and therefore best, use.[76]

73. *See generally* Robert Glennon & Michael J. Pearce, *Transferring Mainstem Colorado River Water Rights: The Arizona Experience*, 49 ARIZ. L. REV. 235, 236, 242–47 (2007) (analyzing several market-based water transfers along the Colorado River and the bargaining process involved).

74. SHARING WATER IN TIMES OF SCARCITY: GUIDELINES AND PROCEDURES IN THE DEVELOPMENT OF EFFECTIVE AGREEMENTS TO SHARE WATER ACROSS POLITICAL BOUNDARIES 20 (Stephen E. Draper ed., 2006) (citations omitted); *see also* Jonathan H. Adler, *Water Rights, Markets, and Changing Ecological Conditions*, 42 ENVTL. L. 93, 95 (2012) (reviewing scholarship supporting the argument that water markets can provide effective conservation mechanisms as well as efficient balancing of environmental goals); James L. Huffman, *Water Marketing in Western Prior Appropriation States: A Model for the East*, 21 GA. ST. U. L. REV. 429, 447–48 (2004) (commenting that many people and groups in Western states, even environmental groups, see water markets as a "pragmatic and cost-effective way to achieve their objectives"). *But cf.* Janet C. Neuman, *The Good, the Bad, and the Ugly: The First Ten Years of the Oregon Water Trust*, 83 NEB. L. REV. 432, 433, 441 (2004) (observing the positive and negative impacts of using water markets on management).

75. *See, e.g.*, A. Dan Tarlock, *Current Trends in United States Water Law and Policy: Private Property Rights, Public Interest Limitations and the Creation of Markets*, *in* THE SCARCITY OF WATER: EMERGING LEGAL AND POLICY RESPONSES 185, 185, 195 (E. Brans, E. de Haan, A. Nollkaemper & J. Rinzema eds., 1997) (emphasizing the goal of water transfers).

76. *See* Janis M. Carey & David L. Sunding, *Emerging Markets in Water: A Comparative Institutional Analysis of the Central Valley and Colorado-Big Thompson Projects*, 41 NAT. RESOURCES J. 283, 284 (2001) ("Water trading is a practice of considerable interest as a means to improve the productivity of developed water supplies and reconcile competing uses. Standard economic theory suggests that markets evolve in response to changes in supply and demand. As a commodity becomes relatively scarce and the gains from trade increase, economists would expect to observe institutional reforms that legitimize or facilitate trading."); *see also* Alexander Rhodes, *Capacity Sharing: The Next Step in Florida's Evolving Water Economy*, 26 STETSON L. REV. 805, 832 (1997) (arguing "[w]ater markets lead to the most efficient use of the groundwater" and have built-in incentives to conserve water); Sandra Zellmer, *The Anti-Speculation Doctrine and Its Implications for Collaborative Water Management*, 8 NEV. L.J. 994, 995–96 (2008) (discussing the World Bank and International Monetary Fund's encouragement of developing nations to adopt water market systems through privatization, which would allow them to maximize the use of available water); *cf.* Robert Glennon, *Water Scarcity, Marketing, and Privatization*, 83 TEX. L. REV. 1873, 1902 (2005) (contending that current water allocation laws promote both "wasteful irrigation and mind-numbing sprawl" and proposing market principals be introduced as one method of reallocating water use).

Rather than simply providing licenses for water use, implementation of water markets requires creating private ownership rights in the water.[77] Ideally, privatization would introduce supply and demand principles into traditional water allocation, therefore eliminating waste and promoting efficient use and allocation.[78] Water markets create a number of economic and social advantages by maximizing the efficient use of water and encouraging conservation.[79] When private ownership rights are granted, owners are incentivized to conserve water and use it in the most economically beneficial way.[80] Granting private ownership rights should engender the owner of a water right to invest in conservation measures that he or she would not pursue if the right remained only possessory.[81]

Champions of privatizing water rights believe assigning higher prices to scarce resources will help avoid the tragedy of the commons problem.[82] Water-market advocates argue if the costs of scarcity were included as water-pricing factors, higher prices would encourage water consumers to conserve more, which would lead to greater efficiency.[83] In the agricultural context, if water rights were openly traded, as opposed to arbitrarily assigned (i.e., "first in time, first in right"), the Rice Producers Group would have much greater incentive to sell off its excess water for profit rather than retain or waste it.[84] Provided there are willing buyers, the excess agricultural water could instead be sold to users who value the

77. *See* SHARING WATER IN TIMES OF SCARCITY: GUIDELINES AND PROCEDURES IN THE DEVELOPMENT OF EFFECTIVE AGREEMENTS TO SHARE WATER ACROSS POLITICAL BOUNDARIES 20 (Stephen E. Draper ed., 2006) (distinguishing the allocations).

78. *See id.* at 22 (surveying the effects of privatization).

79. *See id.* (highlighting the advantages to water markets).

80. *See generally id.* (arguing private property rights encourage users to be "more conscientious and efficient about their water use").

81. *See id.* at 22–23 (evaluating the two types of water rights).

82. *Id.* at 20 (asserting that rationing based on market prices forces individuals to economize on scant resources and discourages waste). The tragedy of the commons refers to the eponymous Nobel Prize winning work by Garrett Hardin—who addressed the problems created when natural resources are held in common by all without restrictions on how those resources can be used. *See* Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243, 1244–45 (1968) (hypothesizing that when resources are held in common, the likelihood of their destruction dramatically increases). In Hardin's example, if a parcel of grassland is held in common and nearby ranchers are able to graze their herds on that land with impunity, that parcel of land will eventually be destroyed; each farmer will be motivated to maximize his own profits by adding more and more cattle to the land until the parcel is completely overgrazed. *Id.*

83. SHARING WATER IN TIMES OF SCARCITY: GUIDELINES AND PROCEDURES IN THE DEVELOPMENT OF EFFECTIVE AGREEMENTS TO SHARE WATER ACROSS POLITICAL BOUNDARIES 22 (Stephen E. Draper ed., 2006) (echoing the effects of resource scarcity on efficient uses).

84. *Id.* (noting the potential of "balanced growth" when the ability to trade water rights belongs to the farmer).

resource more than those who would waste it.[85] Highland Lakes would have similar profit motive to sell its surplus and send it downstream.[86]

Some scholars hail the recent water reform measures in Chile as an example of an ideal water market.[87] Following the overthrow of the Allende regime, the Chilean government created a radical water appropriation policy heavily influenced by free-market economics.[88] The Chilean government hoped implementing free-market principals would provoke all appropriators to conserve as much water as possible in order to sell the surplus or transfer the water to higher-valued uses.[89] As a result, the government developed a new system granting private rights in groundwater and allowed for title to be freely traded, bought, or sold.[90] Finally, in the Coasean spirit, the Chilean water laws severely limited the authority of the government to affect water transfers.[91] The government must intervene only in times of scarcity to require public auctions of surplus water to ensure efficient allocation.[92]

While the Chilean experience is an interesting and instructive model for market mechanisms in water transfers, it is important to recognize the water market model also has its drawbacks.[93] For instance, the essential

85. *See id.* at 22–23 (showing how resources can be allocated to minimize waste).

86. For a theoretical explanation of why one user may value water resources over another, see SHARING WATER IN TIMES OF SCARCITY: GUIDELINES AND PROCEDURES IN THE DEVELOPMENT OF EFFECTIVE AGREEMENTS TO SHARE WATER ACROSS POLITICAL BOUNDARIES 20–23 (Stephen E. Draper ed., 2006) (explaining generally why one user may value the resource more than another).

87. *Id.* at 20 (citing the Chilean water markets as successful).

88. Joe Mentor, Jr., *Trading Water, Trading Places: Water Marketing in Chile and the Western United States*, Presentation at the AWRA/IWLRI-Univ. of Dundee Int'l Specialty Conference, Globalization and Water Res. Mgmt.: The Changing Value of Water (Aug. 6, 2001), *available at* http://www.awra.org/proceedings/dundee01/Documents/Mentor.pdf (reporting on Chile's appropriation scheme).

89. *Id.* (citing the goals of the Chilean government).

90. *Id.* (describing the system allowing transferrable private rights).

91. *See id.* (finding the "DGA (the Dirección General de Aguas or General Water Directorate) functions primarily are technical and administrative"); *see also* R.H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1, 17–18 (1960) (arguing that parties should strive for transfers of property rights absent governmental interference).

92. Joe Mentor, Jr., *Trading Water, Trading Places: Water Marketing in Chile and the Western United States*, Presentation at the AWRA/IWLRI-Univ. of Dundee Int'l Specialty Conference, Globalization and Water Res. Mgmt.: The Changing Value of Water (Aug. 6, 2001), *available at* http://www.awra.org/proceedings/dundee01/Documents/Mentor.pdf (basing this conclusion on Chile's water regulations).

93. *See* Joseph W. Dellapenna, *Climate Disruption, the Washington Consensus, and Water Law Reform*, 81 TEMP. L. REV. 383, 402, 427 (2008) (finding the positive effects of the new water laws enacted in Chile to be "negligible," and that they most likely promoted wealth inequality that negatively impacted the poor).

low transaction cost component of the Coase Theorem is extremely difficult to satisfy in water transfers.[94] Economically efficient solutions to water transfer problems must take high transaction costs and other barriers to negotiation into consideration.[95]

Professor Joseph Dellapenna offered a scathing critique of the water market concept warning against the "blind faith" adherence to "market fundamentalism."[96] Dellapenna argued such blind faith often leads to a misapplication of Coasean economics.[97] The most common of these misapplications in the establishment of water markets is the assumption of no transaction costs in an exchange.[98] This assumption is fundamentally at odds with the Coase Theorem, which takes great pains to stress: "markets fail when there are significant barriers to their functioning."[99]

Even when transaction costs pose no barriers to a market exchange, water markets are difficult to introduce for a variety of other reasons.[100] The primary reason is water resources and ecosystems are public goods, and therefore, cannot be provided to one user without allowing equal use

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94. *See* Charles W. Howe, Carolyn S. Boggs & Peter Butler, *Transaction Costs as Determinants of Water Transfers*, 61 U. COLO. L. REV. 393, 397 (1990) (enumerating the multitude of factors that contribute to the transaction costs of water transfers, including "search costs by buyers and sellers[,] . . . brokerage service fees[,] . . . public agency review[,] and administrative costs" as well as the costs of hydrology and other "special studies").

95. *See* C. Carter Ruml, *The Coase Theorem and Western U.S. Appropriative Water Rights*, 45 NAT. RESOURCES J. 169, 199 (2005) (concluding that the Coase Theorem can be successfully applied only where institutions facilitate "low transaction costs and secure property rights").

96. *See* Joseph W. Dellapenna, *Climate Disruption, the Washington Consensus, and Water Law Reform*, 81 TEMP. L. REV. 383, 402, 427 (2008) (criticizing water markets).

97. *Id.* at 397–98 (citing R.H. COASE, THE FIRM, THE MARKET, AND THE LAW 1–20 (1988); Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960)) ("Coase . . . stress[ed] . . . markets fail when there are significant barriers to their functioning. Coase would later note that economists who ignore basic concerns about why markets succeed or fail are practicing the typical 'blackboard economics' that is the bane of most academic economists.").

98. *See* Joseph W. Dellapenna, *Climate Disruption, the Washington Consensus, and Water Law Reform*, 81 TEMP. L. REV. 383, 398 (2008) (challenging the concept of a "frictionless market"—a market without transaction costs).

99. *See id.* (finding that there are always transaction costs). Later in his career, Professor Coase clarified his position on the role of government regulation by arguing his theory was not based on a skepticism or disregard of government regulations, but rather was a call to reduce government involvement for fear that the state often overextends its reach. *See* R.H. Coase, *Law and Economics and A.W. Brian Simpson*, 25 J. LEGAL STUD. 103, 106–09 (1996) (finding the efficacy of governmental regulation on harmful effects to be overestimated, and that lines of where government regulation should be curtailed remain unclear). Upon reflection of his evolving views on governmental intervention, Professor Coase concluded: "It is inaccurate to say that I have a 'general skepticism about state action.'" *Id.*

100. *See generally* HOLLY DOREMUS & A. DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN 195 (2008) (offering reasons for the difficulty).

to all.[101] Private entities, along with the capital they provide, are disincentivized from producing public goods because consumers will consume goods without paying for them.[102] Thus, because private entities would be prevented from enjoying the maximum profits from their investments, the production and distribution of public goods is often best left to the government.[103]

Subjective attachments and expectations related to water rights hinder the application of the Coase Theorem to water allocation disputes.[104] The impact a single farmer has on a river or lake is likely to be minimal.[105] However, his minimal impact creates an expectation in the farmer's mind that the resource will always be available to him as he presently uses it.[106] Over time, subsequent entitlement holders will develop the same dependence and expectation, but will simultaneously increase strain on the resource.[107] Eventually the strain on the water will become too great to sustain all of the entitlements; yet, the entitlement holders will be unwilling to relinquish their claims.[108] Those "who have historically been allowed to exercise their entitlements without concern for the [resource] resist any suggestion that they are obligated to provide any [conservation] services without compensation."[109] As a result, when individuals receive resources without cost, the idea of "suddenly purchas[ing] those services" seems ridiculous.[110]

Many of the problems faced by water markets could easily form the basis of arduous and contentious litigation between Highland Lakes and the Rice Producers Group. Fortunately, some of the most prominent scholars in the field of law and economics have developed methods for achieving economic efficiency once litigation or state interference ensues.

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101. *See id.* (presenting that other public goods include "roads, national defense, and consumer regulations.").

102. *See id.* (identifying another example of "free-riding").

103. *See id.* at 196 (suggesting that because the government can "compel all the beneficiaries [of public goods] to contribute through the tax system," it is in a better position to produce and distribute public goods).

104. *See id.* at 196 (discussing individual interests).

105. *Id.* at 195 (suggesting that one person's impact can be minimal).

106. *See id.* (explaining this mind set).

107. *Id.* (showing how individual interests accumulate).

108. *Id.* (advancing the idea that all individual interests cannot be sustained).

109. *See* HOLLY DOREMUS & A. DAN TARLOCK, WATER WAR IN THE KLAMATH BASIN 195 (2008).

110. *See id.* at 195–96 (2008) ("The more entrenched the initial entitlement, psychologically or legally, the greater the resistance to negotiations.").

C. *Calabresi and Melamed's "Cathedral" Model*[111]

One of the most famous expansions of Coase's ideas and insights is Calabresi and Melamed's "Cathedral" model of "liability rules" and "property rules."[112] Under the Cathedral model, disputes over property rights are resolved by analyzing the ways in which "entitlements" are protected by liability, property, or inalienability rules.[113] An entitlement occurs when a conflict arises between parties, and the legal system must determine which side to favor in that conflict.[114] For example, there is an "entitlement to make noise versus the entitlement to have silence, the entitlement to pollute versus the entitlement to breathe clean air, the entitlement to have children versus the entitlement to forbid them," or in the current dispute, the entitlement to use the surplus water in the Highland Lakes versus the entitlement retain it.[115]

Under the Cathedral model, a state actor, rather than a private party, assigns entitlements making state intervention necessary.[116] The first step the state must take is to determine which party should be awarded the entitlement.[117] The next step is to determine how the entitlements should

111. Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972).

112. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 440 (1995) (stating that Calabresi and Melamed's work is an extension of Coase's ideas).

113. Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1090 (1972) (proclaiming the law decides which adverse party will prevail and receive the entitlement); *see also* A. Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 STAN. L. REV. 1075, 1076 (1980) (explaining that under the Cathedral model, an entitlement is protected either by a property or a liability rule). Inalienability refers to property or entitlements that can never be transferred; therefore it will not be discussed in this Comment.

114. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1090 (1972) (applying the term "entitlement").

115. *Id.* (providing the example of an entitlement); *see also* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 442 (1995) (noting the method of the Cathedral model was to "model the conflict" between parties in terms of an entitlement to an "environmental resource at stake" and the methods by which that entitlement ought to be protected).

116. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (explaining when entitlements need state intervention).

117. *See, e.g.*, A. Mitchell Polinsky, *Resolving Nuisance Disputes: The Simple Economics of Injunctive and Damage Remedies*, 32 STAN. L. REV. 1075, 1076 (1980) (resolving nuisance disputes results in deciding "who is entitled to prevail").

be protected.[118] The methods and consequences of such protections ultimately form the basis of the Cathedral model.[119]

As stated above, entitlements are protected either by "property rules" or "liability rules."[120] "An entitlement is protected by a property rule to the extent that someone who wishes to remove the entitlement from its holder must buy it from him in a voluntary transaction in which the value of the entitlement is agreed upon by the seller."[121] The property rule necessitates the least amount of judicial intervention.[122] Once the entitlement is awarded, the parties both assign their subjective values to the resource and bargain for it.[123] If there is no agreement, there is no exchange.[124] Conversely, "[w]henever someone may destroy the initial entitlement if he is willing to pay an objectively determined value for it, an entitlement is protected by a liability rule."[125] Liability rules require additional judicial action because a court must both assign the entitlement and "objectively" determine its value.[126]

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118. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (valuing the protection needed for each entitlement); *see also* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 442 (1995) (stating that after a determination of what the entitlement is, the next step is for the court to determine whether a property or a liability rule protects the entitlement).

119. Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092, 1128 (1972) (referring to the framework presented as "one view of the Cathedral").

120. *Id.* at 1092 (clarifying the classification affects protection).

121. *Id.* (declaring that a property rule creates a scheme in which willing buyers and sellers agree to an exchange at a price determined through negotiation); *see also* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 443 (1995) (illustrating that a property rule approach "leaves the parties in a situation where subsequent voluntary transactions between them are the means by which they might move the entitlement from one party to the other"); Yang Wang, Note, *Now, Later, or Never: Applying Asymmetric Discount Rates in Nuisance Remedies and Federal Regulations*, 105 MICH. L. REV. 2035, 2058–59 (2007) (summarizing property rules as those subject to transfer by voluntary agreement).

122. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (asserting the state does not need to decide the value of the entitlement).

123. *Id.* (emphasizing the parties' ability to assign a value).

124. *Id.* (indicating parties must be in agreement).

125. *Id.*; *see also* David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 13 (1990) ("An entitlement is protected by a property rule if the law condones surrender only through voluntary exchange[, and] [a]n entitlement has the lesser protection of a liability rule if it can be lost lawfully by anyone willing to pay court-determined compensation.").

126. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (introducing the idea that courts must determine the value for liability rules). A simple example of a liability rule would be a government

The Cathedral model concerned itself with entitlements to (or freedom from) nuisance and pollution;[127] however, its basic structure can be applicable in many different situations.[128] The model is best understood by applying one of four possible rules of entitlements and protections to a given conflict.[129] The first of the three rules follows two parties, Taney, who wishes to pollute, and Marshall, who wishes to be free from pollution:

> First, Taney may not pollute unless his neighbor (his only neighbor let us assume), Marshall, allows it (Marshall may enjoin Taney's nuisance). Second, Taney may pollute but must compensate Marshall for damages caused (nuisance is found but the remedy is limited to damages). Third, Taney may pollute at will and can only be stopped by Marshall if Marshall pays him off (Taney's pollution is not held to be a nuisance to Marshall). In our terminology[,] rules one and two (nuisance with injunction and with damages only) are entitlements to Marshall. The first is an entitlement to be free from pollution and is protected by a property rule; the second is also an entitlement to be free from pollution but is protected only by a liability rule. Rule three (no nuisance) is instead an entitlement to Taney protected by a

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taking of property, whereby the entitlement to ownership or use of land is destroyed or transferred, but the previous entitlement holder is compensated at a price set by a third party or some other arm of the state. *See* Thomas W. Merrill, *The Economics of Public Use*, 72 CORNELL L. REV. 61, 64 (1986) (adopting the Cathedral model to explain the distinction between property rules and liability rules); *see also* David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 14 (1990) (utilizing the Cathedral model to explain various compensation structures when the government conducts an unconsented taking of property).

127. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1092 (1972) (forming the basis of the Cathedral model).

128. *See* Dobson v. Camden, 705 F.2d 759, 770 (5th Cir. 1983) (employing Calabresi and Melamed's model to determine whether economic damages will sufficiently deter police brutality), *reh'g granted*, 725 F.2d 1003 (1984); Webster v. City of Houston, 689 F.2d 1220, 1237 (5th Cir. 1982) (using the Cathedral model to determine whether punitive damages are appropriate in cases of malicious official misconduct), *reh'g granted*, 739 F.2d 993 (1984); Tint v. Sanborn, 259 Cal. Rptr. 902, 908 (Cal. Ct. App. 1989) (applying the Cathedral model to determinations of comparative liability in negligence actions); Comet Delta, Inc. v. Pate Stevedore Co. of Pascagoula, 521 So. 2d 857, 862 (Miss. 1988) (employing the Cathedral model to assign liability where coal dust allegedly damaged a large shipment of rice); Sonya P. Passi, Annual Review, *Compensated Injunctions: A More Equitable Solution to the Problem of Inevitable Disclosure*, 27 BERKELEY TECH L.J. 927, 944 (2012) (applying the Cathedral model to the protection of trade secrets); John R. Remakel, *A Minnesota Armistice? The Enactment and Implementation of the Minnesota Shooting Range Protection Act*, 31 HAMLINE L. REV. 197, 226 (2008) (urging the use of the Cathedral model in settling a nuisance dispute between residents and a nearby shooting range). *See generally* Noel Elfant, Comment, *Compensation for the Involuntary Transfer of Property Between Private Parties: Application of a Liability Rule to the Law of Adverse Possession*, 79 NW. U. L. REV. 758, 765 (1984) (arguing elements of the Cathedral model are more economically efficient than traditional application of adverse possession laws).

129. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1115–16 (1972) (stating the model's best application).

> property rule, for only by buying Taney out at Taney's price can Marshall end the pollution.[130]

According to the Cathedral model, rules one and three (property rules) generally apply in situations where transaction costs are low enough to facilitate negotiations, and when the parties can easily determine who is in the best position to avoid the cost of the pollution (or in the current dispute: waste of water resources).[131] To use an example, if Highland Lakes was granted an entitlement to the surplus water, but the Rice Producers Group valued the water more, the Rice Producers Group would pay Highland Lakes for the water.[132] If the Rice Producers Group received the entitlement, but Highland Lakes valued the water more, Highland Lakes would be willing to pay to retain the surplus.[133] "The moment we assume, however, that transactions are not cheap, the situation changes dramatically."[134]

1. Rule Four

In the Highland Lakes and Rice Producers Group dispute, the transaction costs are quite high.[135] The negotiation process was long and arduous, and neither party was completely satisfied with the recent plan drafted by the LCRA.[136] The Cathedral model contains a fourth rule for when transaction costs are high, and it is difficult to discern the party best situated to avoid the costs of wasting resource.[137] "The fourth rule, really

130. *Id.* (internal citations omitted).

131. *See id.* at 1118 (explaining that property rules would be employed from an economic efficiency standpoint if the polluter "could avoid or reduce the costs of pollution more cheaply than the pollutee[;]" in other words, "[the polluter] would be enjoinable if he were in a better position to balance the costs of polluting against the costs of not polluting"); *see also* Ward Farnsworth, *Do Parties to Nuisance Cases Bargain After Judgment? A Glimpse Inside the Cathedral*, 66 U. CHI. L. REV. 373, 379 (1999) (surveying the works of several scholars who have argued that parties can bargain around damages and injunction "when transaction costs are low enough").

132. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1118 (1972) (recognizing that the one who values the resource more will pay to have it if the other values it less).

133. *See id.* (demonstrating that if Marshall had the right "to enjoin the pollution and the right to pollute was worth more to Taney than freedom from pollution was to Marshall, Taney would pay Marshall not to seek an injunction or would buy Marshall's land and sell it to someone who would agree not to seek an injunction").

134. *Id.* at 1119.

135. *See* Terrence Henry, Few *Satisfied with New LCRA Water Plan*, STATEIMPACT TEXAS (Feb. 22, 2012, 10:14 AM), http://stateimpact.npr.org/texas/2012/02/22/few-satisfied-with-new-lcra-water-plan/ (detailing the costs to the parties).

136. *Id.*

137. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One*

a kind of partial eminent domain coupled with a benefits tax, can be stated as follows: Marshall may stop Taney from polluting, but if he does, he must compensate Taney."[138] For example, under rule four, if the Rice Producers Group receives the entitlement (the right to use the surplus water), Highland Lakes must send the surplus water downstream. However, the Rice Producers Group would be required to compensate Highland Lakes for the economic losses it sustained as a result.[139] Conversely, if Highland Lakes received the entitlement to retain the surplus water, it must compensate the Rice Producers Group if denial of the surplus prevented production of the ratoon crops.[140]

Rule four attempts to alleviate the transaction costs associated with both property rule entitlements (those bargained for between willing parties) and liability rule entitlements (involuntary exchanges between a willing buyer and an unwilling seller).[141] To better understand how rule four could apply to the current dispute, it is important to consider the reasons why other methods of entitlement fail.

First, consider rule two: "Taney may pollute but must compensate Marshall for damages caused."[142] Translated to the current dispute, Highland Lakes would be given the entitlement to the surplus water, but must compensate the Rice Producers Group for damages (i.e., the cost of the lost ratoon crop, etc.). A seemingly fair arrangement, but paying the costs of these damages could bankrupt Highland Lakes—resulting in "disastrous distribution effects" and making the bargain inefficient.[143] Rule four alleviates problems associated with rule two because Highland Lakes would send the surplus downstream to the Rice Producers Group,

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View of the Cathedral, 85 HARV. L. REV. 1089, 1116 (1972) (reinforcing the idea that the party who values the resource more will pay to control it).

138. *Id.*

139. For the basis of this example, see Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1121 (1972).

140. *Id.*; *see also* Troy Rule, *A Downwind View of the Cathedral: Using Rule Four to Allocate Wind Rights*, 46 SAN DIEGO L. REV. 207, 236–37 (2009) (extending rule four to the allocation of wind rights when there are both upwind and downwind developers).

141. *See* Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1120 (1972) ("For just as transaction costs are not necessarily symmetrical under the two converse property rule entitlements, so also the liability rule equivalents of transaction costs—the cost of valuing collectively and of coercing compliance with that valuation—may not be symmetrical under the two converse liability rules.").

142. *Id.* at 1116 (1972).

143. *See id.* at 1121 (explaining how the bargain can become inefficient).

and the Rice Producers Group would pay a court-determined amount to Highland Lakes for their losses.[144]

Now consider rule three: "Taney may pollute at will and can only be stopped by Marshall if Marshall pays him off."[145] Translated to the current dispute, Highland Lakes gains the full entitlement to the surplus water and the Rice Producers Group can only obtain that water by paying the price set by Highland Lakes.[146] At first look, rule three fits well within the Coase Theorem concept of efficient bargaining, but it is highly susceptible to negotiation breakdowns and high transaction cost barriers.[147] If the rice producers are unable to unite (create a firm) to pay Highland Lakes due to holdouts and free-riders, economic efficiency will suffer.[148] Under rule four, however, the price paid to the enjoined party is set by the court; thereby, eliminating any incentive to holdout for a better price.[149]

Despite its theoretical applicability, the practical operation of rule four is often wanting.[150] For example, just as high transaction costs impede productive negotiations; high assessment costs interfere with a judge's ability to calculate damages.[151] Assessment costs are the costs that arise when the court must gather and analyze data necessary to determine the benefits or damages of a dispute.[152] When, as is often the case, assessment costs are too high, the rule four loses its preferential status.[153]

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144. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 444 (1995) (explaining that under rule four, when the entitlement is protected by a liability rule, the party without the entitlement can enjoin the action of the other party as long as the enjoining party pays an amount determined by the court as damages).

145. Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1116 (1972).

146. *See id.* (relating the application of rule three).

147. *See id.* at 1121 (writing that rule three could "have unsatisfactory efficiency effects").

148. *See id.* (uniting homeowners in a scenario to increase efficiency).

149. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 443 (1995) (showing the court's role).

150. *See id.* at 453–55 (1995) (acknowledging that miscalculating liability damages could lead to inefficient or inequitable outcomes).

151. *See id.* at 456–58, 468–475 (1995) (analyzing what they refer to as the "infinite regress" problem, which occurs when there are both high transaction costs and high assessment costs). According to Krier and Schwab, conventional wisdom offers two pieces of advice: the first is when "transaction costs are low, use property rules (and otherwise, use liability rules)"; the second is when "damages can be computed with reasonable accuracy, use liability rules (and otherwise, use property rules)." *Id.* (establishing that when both transaction and assessment costs are high, "the judge will be led back and forth between the two bits of advice, on and on, et cetera, ad infinitum," thus the "infinite regress" problem).

152. *Id.* at 453 (defining assessment costs).

153. *See id.* at 454 (recognizing real-world costs eliminate a "bald preference for liability rules").

The difficulty of assessment costs does not eliminate the value of rule four, but such costs may limit its application to circumstances in which transaction costs are high, but assessment costs are low.[154]

Prohibitive assessment costs notwithstanding, the ultimate goal of rule four is to strike a balance between efficiency and justice.[155] If the application of rule four will prevent waste of the surplus water in the Highland Lakes, and reduce litigation costs, it will lead to an economically efficient outcome.[156] Additionally, if justice can be defined as "essentially everything else that matters to a sensible resolution—distributional or corrective justice," applying rule four to the current dispute can also bring forth justice.[157] Although one party may lose access to the surplus water, they will gain financial compensation for the loss; conversely, the compensating party will gain use of the resource, which will balance their financial loss.[158] Rule four, if applied under the right circumstances, will create economic efficiency and meet the distributional goals of fairness and wealth equality.[159]

2. Spur Industries, Inc. v. Del E. Webb Development Co.[160]

The most famous example of rule four in action is the radical *Spur* case.[161] In this landmark decision, a developer (Del Webb) built a new residential development abutting land used as a cattle feedlot by Spur Industries.[162] Spur Industries had operated the feedlot for several years roughly fifteen miles from the Phoenix city limits.[163] There were two

154. *See, e.g., id.* at 453 (asserting the limits of rule four).

155. *See generally id.* at 446 (balancing efficiency and justice).

156. *Id.* ("'Efficient' resolutions are taken to be those that maximize the value of the resource (or minimize the cost of the conflict over the resource), with value (or cost) being measured, as is usual in economics, in terms of willingness to pay given some distribution of wealth or entitlements.").

157. *Id.*

158. *Id.* (reporting the results).

159. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 447 (1995) (detailing how the application of rule four can be economically efficient and fair).

160. Spur Indus., Inc. v. Del E. Webb Dev. Co., 494 P.2d 700 (Ariz. 1972) (en banc).

161. *See generally id.* at 702–08 (adjudicating the case using principles later encompassed into the Cathedral model); James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 444–45 (1995) (discussing the *Spur* case and the application of rule four).

162. *Spur Indus.*, 494 P.2d at 702–04.

163. Jeff L. Lewin, *Boomer and the American Law of Nuisance: Past Present and Future*, 54 ALB. L. REV. 189, 248 (1990).

issues before the court in *Spur*.[164] The first issue was whether Del Webb could enjoin the nuisance created by the noxious odors and flies emanating from the feedlot.[165] Given the proximity of the feedlot to the residential area, the court had little difficulty in finding a nuisance and enjoining Spur Industries.[166] However, what makes *Spur* so fascinating is the second issue before the court.[167] The court held that while Del Webb was entitled to an injunction, the developer would be required to compensate Spur Industries for its relocation costs.[168]

The analysis in *Spur* fell squarely within the Cathedral model[169] and can, therefore, be instrumental to the resolution of the current dispute. The court found that "Spur is required to move not because of any wrongdoing on the part of Spur, but because of a proper and legitimate regard of the courts for the rights and interests of the public," and "Del Webb . . . is entitled to [a permanent injunction] not because Webb is blameless, but because of the damage to the people who have been encouraged to purchase homes in [his development]."[170] Because the detriment to Spur was foreseeable, and because Webb took advantage of "lesser land values in a rural area, as well as the availability of large tracts of land on which to build and develop a new town or city," the court found it fair to require Webb to indemnify Spur.[171]

The purpose of this Comment is not to foretell liability for either the Rice Producers Group or Highland Lakes. Although their interests are in conflict, the operating assumption is that both parties are innocent of any wrongdoing, which makes the current dispute somewhat analogous to *Spur*.[172] Rather, the object here is to demonstrate that nuisance principles

164. *Spur Indus.*, 494 P.2d at 706.

165. *Id.*

166. *Id.*

167. *Id.* at 707–08 (granting Del Webb the injunction based on the existence of public and private nuisance).

168. *See id.* at 707–08 (requiring Webb to compensate Spur out of equity because Webb brought the community to Spur, which would normally bar Webb from getting the injunction under the "coming to the nuisance" doctrine).

169. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 444 (1995) (revealing that publication of the Cathedral model coincided with the rendering of the *Spur* decision, though neither appeared to have been influenced by the other); Jeff L. Lewin, *Boomer and the American Law of Nuisance: Past Present and Future*, 54 ALB. L. REV. 189, 248–49 (1990) (explaining that *Spur* was the first example of the application of rule four under the Cathedral model).

170. *Spur Indus.*, 494 P.2d at 707–08.

171. *Id.* at 708.

172. *Id.* (finding that the parties' interests were at odds, but neither party was necessarily committing a wrong).

outlined in scholarly work and in *Spur* may serve as a framework through which the current dispute can be better understood.

Spur has not been widely followed.[173] Aside from a subtle nod from the United States Supreme Court, the case made little progress outside of academic circles.[174] In fact, Calabresi and Melamed recognized that rule four "does not lend itself to judicial imposition for a number of good legal reasons."[175] The scholars worried that it would be difficult to precisely determine the benefits and injuries between the parties while simultaneously "observing the procedural limits within which the courts are expected to function."[176] But Calabresi and Melamed also recognized their new view of entitlements is a framework through which courts and scholars could fashion new resolutions to old problems.[177] As *Spur* illustrates, courts are capable of applying rule four to achieve economically efficient outcomes.[178] In fact, *Spur*'s reasoning arose organically without aid from Calabresi and Melamed's work, which is powerful evidence of its inherent value.[179]

D. *Tort Liability Rules*

A final and more unorthodox economic approach to water allocation disputes exists via the transposition of traditional water transfer rules and

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173. *Id.* at 700 (announcing its decision in 1972). Professor Melamed speculated the "large number problem" was the reason why rule four was not widely followed in private litigation. *See* A. Douglas Melamed, *Remarks: A Public Law Perspective*, 106 YALE L.J. 2209, 2209 (1997) (providing the "large number problem" refers to the existence of "large numbers on the plaintiff/victim/payor side" in private litigation, which inhibit the application of rule four, but also hypothesizing that *Spur* was able to utilize rule four because there were only two parties to the litigation). Under Melamed's theories, if the multiple individual interests comprising Highland Lakes and Rice Producers Group were combined into two respective parties, rule four could be more easily applied. *See id.* at 2209–10 (suggesting when parties can condense themselves, rule four can be more readily applied).

174. *See* Weinberger v. Romero-Barcelo, 456 U.S. 305, 314 n.7 (1982) (citing the *Spur* case); *see also* A. Douglas Melamed, *Remarks: A Public Law Perspective*, 106 YALE L.J. 2209, 2210–13 (1997) (reflecting on the evolution and use of rule four, twenty-five years after inception, and finding that it is frequently used to resolve public law problems, but is rarely used in private litigation).

175. Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089, 1116 (1972).

176. *Id.* at 1117.

177. *See, e.g., id.* at 1128 (promoting the framework created).

178. *See* James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U. L. REV. 440, 445 (1995) ("And that's rule four.").

179. *See id.* at 444 (indicating that when Professors Calabresi and Melamed were constructing the Cathedral model at Harvard, the Arizona Supreme Court in *Spur* "was searching for a rough-and-ready solution to a commonplace nuisance dispute" and that "[l]ogic drove the scholars, but necessity moved the judge—in each instance and at the same time[—]to the theretofore nonexistent, and even now rare, rule four").

rules of tort liability.[180] First, to clarify terminology, the definition of "liability" in this section will return to the traditional definition as it is understood in the legal community. The economic basis for tort liability is principally based in the Coase Theorem, but has expanded over several decades through the work of many other eminent scholars.[181] The purpose of applying sanctions under tort law is to encourage people and entities to "internalize the external costs ... of socially beneficial activities."[182] Therefore, "[e]fficiency, and hence 'optimal deterrence,' requires that an actor take into account all the costs that a given activity imposes on the actor and on others."[183] In other words, the most efficient sanctions will be those that decrease the marginal benefit of a given activity by increasing the marginal costs.[184] Thus, "efficient legal sanctions will equal the external costs at the margin."[185]

Given the high likelihood of market failures in water allocation,[186] the application of no liability, negligence, and strict liability tort principles could compensate for inefficient allocation of the resource.[187] The viability of each of these liability schemes will be discussed in turn.

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180. *See* Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 700–01 (1988) (drawing a parallel between the allocation of resources to prevent accidents and the allocation of resources to prevent inefficient use of water).

181. *See* David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 8 (1990) (emphasizing that the economic analysis of tort liability began with Coase, and many other scholars expanded on the idea).

182. *See generally id.* at 8–9 (1990) (showing how negligence principles and sanctions force the negligent party to internalize the costs of the injured party).

183. *Id.* at 8; *see also* Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 2 (1985) (analyzing the "direct cost of harm" and the cost of precautions against it).

184. David D. Haddock, Fred S. McChesney & Menahem Spiegel, *An Ordinary Economic Rationale for Extraordinary Legal Sanctions*, 78 CALIF. L. REV. 1, 8 (1990).

185. *Id.*

186. *See* Christine A. Klein, Mary Jane Angelo & Richard Hamman, *Modernizing Water Law: The Example of Florida*, 61 U. FLA. L. REV. 403, 470 (2009) (dispelling "[t]he conventional faith in the efficiency of free markets ... when the relevant commodity is a water right"); *see also* Jedidiah Brewer, Robert Glennon, Alan Ker & Gary Libecap, *Transferring Water in the American West: 1987–2005*, 40 U. MICH. J.L. REFORM, 1021, 1025–39 (2007) (describing the plethora of regulations, legal issues, and other forces that increase the cost of market transfers of water).

187. *See, e.g.*, Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 701 (1988) (discussing the tort principles).

1. No Liability

Under a no-liability standard, the full cost of the harm caused is placed solely on the victim.[188] Therefore, water appropriators operating under a no-liability standard would not be concerned about any waste they create through their use.[189] Recall within the context of the current dispute, Highland Lakes residents will retain surplus water if water levels drop below certain trigger points.[190] And, because nothing in the 2012 WMP would require Highland Lakes to compensate the rice producers for withholding the water,[191] the 2012 WMP has effectively created a no-liability rule.[192] Without incentive for conservation, a no-liability rule would be highly inefficient, as the water could evaporate or be otherwise lost.[193] Because the no-liability user is not required to pay conservation costs, but other potential users would be willing to use or pay for the diminishing surplus, the surplus would not be put to an efficient use.[194] On the other hand, if a no-liability user paid conservation costs, or employed conservation measures, the water loss would decrease.[195] The no-liability rule imposed by the current WMP should be reconsidered because it encourages waste.[196]

2. Strict Liability

The drawbacks of a strict liability approach in water allocation are not as clear as in the no-liability model. In general, strict liability can be an economically inefficient means of avoiding harm or loss.[197] This is

188. *Id.*

189. *See id.* (suggesting the actor acquires no liability for the expense caused to the victim).

190. LOWER COLO. RIVER AUTH., LAKES BUCHANAN AND TRAVIS: WATER MANAGEMENT PLAN AND DROUGHT CONTINGENCY PLANS (Feb. 2012), *available at* http://www.lcra.org/library/media/public/docs/water/wmp/ExhibitA_ProposedWMP_with_Appendices_Mar2012.pdf (providing for retainage for levels below the trigger points).

191. *See generally id.* (omitting any mention of compensation).

192. *See* Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 701 (1988) (defining a no-liability rule as one where an appropriator is not responsible for the loss suffered by others as a result of the appropriators actions).

193. *See id.* ("[T]he no-liability rule is inefficient insofar as the salvaged water is less valuable to the appropriator than to society.").

194. *See, e.g., id.* at 702–03 (illustrating efficient-use scenarios).

195. *See id.* (urging against waste).

196. *See id.* (determining no-liability rules encourage an appropriator to minimized conservation costs and thus, maximize potential water waste).

197. *See* Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 4 (1985) (explaining that when precaution is bilateral, both parties should be responsible for the harm caused).

because of what Professor Cooter referred to as "the paradox of compensation."[198] Using Professor Cooter's example, a factory is allowed to pollute at will, but it must fully compensate a nearby laundry for the damage to its wash.[199] Professor Cooter stated:

> Compensation, however, permits the laundry to externalize costs, thereby compromising efficiency. Thus a paradox results: If the factory can pollute with impunity, harm is externalized by the factory; if the factory must pay full compensation, harm is externalized by the laundry; if compensation is partial, harm is partly externalized by the factory and partly externalized by the laundry. Assigning full responsibility for the injury to one party or parceling it out between the parties cannot fully internalize costs for both of them. Thus, there is no level of compensation that achieves double responsibility at the margin. In technical terms, when efficiency requires bilateral precaution, strict liability for any fraction of the harm, from zero percent to 100 percent, is inefficient.[200]

In other words, if Highland Lakes is allowed use of the surplus, but can waste it at will provided it fully compensates the rice producers, the rice producers, relying on compensation from Highland Lakes, would not exercise the appropriate level of care to ensure they too are not wasting water.[201] Neither party will exercise an efficient level of precaution to avoid waste.[202]

However, in the water allocation context, a strict liability approach also requires that the appropriator pay for all externalities regardless of any actions he or she has taken to avoid waste.[203] Thus, an appropriator has incentives to employ the most efficient level of water conservation in order to avoid paying higher costs for waste.[204] Additionally, barring a sudden and unforeseen waste of the water,[205] parties could stipulate damages in advance, making them more likely to take steps to reduce the

198. *Id.* at 3.

199. *Id.* at 3–4 (offering the factory example).

200. *Id.* at 4.

201. *See id.* (concluding that compensation from one party to another would allow the receiving party to externalize costs and compromise efficiency).

202. *See, e.g., id.* (contending that partial or complete strict liability is inefficient because it allows one or both parties to externalize all or some of the costs).

203. Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 703–17 (1988) (explaining the strict liability approach).

204. *See id.* ("Since the strict liability rule forces appropriators to internalize all costs, appropriators automatically adopt the most efficient level of conservation.").

205. An act of God or other unpreventable cause of substantial water loss would constitute sudden and unforeseen waste.

extent and probability of injury.[206] Thus, a strict liability approach could potentially lead to an efficient allocation of the surplus water.[207]

3. Negligence

A negligence standard is arguably the most efficient of the three liability approaches.[208] By using rules that allocate responsibility for harm to the at-fault party, a negligence standard would alleviate some of the problems associated with the no-liability and strict liability approaches.[209] A negligence standard would also require Highland Lakes users to pay for all water wasted under its system of use, but only up to the point that the rice producers fail to exercise reasonable care on their own behalf.[210] Suppose calculations of water evaporation in Lake Buchanan and Lake Travis were conducted after the trigger-point cutoffs. Under a negligence standard, the Highland Lakes users would be required to compensate rice producers for all water lost to evaporation.[211] By imposing the costs on the Highland Lakes users, they would be compelled to either exercise higher levels of conservation, or be willing to relinquish the water to the rice producers for beneficial use.[212] The rice producers should be strictly monitored in their use of water and be required to compensate the Highland Lakes users for any unnecessary waste from erosion and other environmental factors within the realm of reasonable care.[213]

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206. Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 30 (1985) (favoring a discussion before damages arise).

207. *See generally id.* at 8 (commenting that precautions taken by one party "may be more efficient than bilateral precaution").

208. *See generally id.* at 7 (discussing the negligence standard).

209. *See generally* Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 703–17 (1988) (surveying the rules).

210. *See* Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 7 (1985) (reasoning that adopting fault or negligence principles will cause both parties to exercise an appropriate level of care to avoid accidents); *see also* Robert D. Cooter, *Economic Analysis of Punitive Damages*, 56 S. CALIF. L. REV. 79, 91–94 (1982) (finding the injuring party will be liable for harm caused when that party reduces the level of care below the minimum, and when the injuring party maintains the legal minimum level of care, the injured party will be responsible for his own losses if he fails to also exercise the minimum level of care). Therefore, "each party bears the full cost of the increase in harm caused by the decrease in his precaution." Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 7 (1985).

211. *See* Robert A. Pulver, Comment, *Liability Rules As a Solution to the Problem of Waste in Western Water Law: An Economic Analysis*, 76 CALIF. L. REV. 671, 704–05 (1988) (including the cost of all water lost within an appropriator's system in the potential negligence liability costs).

212. *See id.* (finding a negligence standard gives an appropriator a monetary incentive to operate at an efficient conservation level).

213. *See id.* (emphasizing the inclusion of environmental losses in the negligent loss calculations).

The principal deficiency in the negligence regime is it encourages "rational waste."[214] Rational waste occurs when it is cheaper for a user to waste the water and compensate the other user than it would be to conserve the water and not pay compensation.[215] However, if drought conditions continue, or if the Highland Lakes population continues to increase, or both, even a negligible amount of waste could be disastrous.

The purpose of applying tort liability to water allocation is to "require[] both parties to balance the cost of further precaution against the consequent reduction in harm and to act accordingly."[216] In other words, tort principles require both parties to exercise care in the use and transfer of water to ensure fairness and to prevent waste.[217] Tort liability is not a complete solution to the problems facing Highland Lakes and the Rice Producers Group, but it can be a useful tool in aid of efficiently and fairly apportioning the surplus water.

IV. COLLABORATIVE AGREEMENTS FROM THE WEST

This section will focus on the ways in which several Western states, all with separate and competing claims to the water in the Colorado River, managed to set aside differences and contentious disagreements to find equitable and economically efficient solutions to their water disputes. These examples could serve as helpful guideposts for the current dispute between Highland Lakes and the Rice Producers Group.

A. *Las Vegas*

For several years California, Arizona, Nevada, Colorado, Utah, New Mexico, and Wyoming engaged in a fight over rights to a diminishing water supply from the Colorado River.[218] Of particular concern was the

214. *See id.* 705 (rationalizing that an appropriator will not exercise a higher level of conservation when its marginal cost outweighs its marginal benefit).

215. *See id.* (asserting that an appropriator's optimal level of conservation is equal to an established standard of care, thus giving an incentive to achieve an efficient level of conservation, but giving no incentive to implement conservation beyond the optimal level).

216. Robert Cooter, *Unity in Tort, Contract and Property: The Model of Precaution*, 73 CALIF. L. REV. 1, 44 (1985).

217. *See id.* (clarifying that tort principles give incentives to each party to act in an efficient manner when both parties are liable for the cost of the loss or harm).

218. *See generally* Matt Jenkins, *Colorado River States Reach Landmark Agreement*, HIGH COUNTRY NEWS (Feb. 20, 2006), http://www.hcn.org/issues/316/16111 (recognizing that the negotiation between these states represented an unprecedented level of cooperation and novel decision-making).

218. *See generally id.* (explaining the fight for the Colorado River's water).

growing abundance of water used by the city of Las Vegas.[219] Under an outdated 1922 compact between these states, Nevada was given only four percent of the Colorado River's flow.[220] But the Las Vegas population exploded in subsequent decades, and its meager four percent allocation under the compact became untenable.[221] Consequently, the city's water consumption became a massive burden to the surrounding states as well as Tijuana and Mexicali, Mexico, whose populations are also sustained by the Colorado River.[222] Further complicating matters, the general manager of the Water Authority threatened to have the entire 1922 compact overturned in the United States Supreme Court if the conflict could not be resolved.[223]

The states were on the brink of litigation when, after a series of negotiations, they reached an agreement that forestalled an expensive and time-consuming legal battle.[224] Because Las Vegas' use of water created the greatest burden to other consumers, the city agreed to two possible litigation alternatives.[225] First, the city would pick up the $80-million tab to assist the federal government in building a new reservoir along the California-Mexico border.[226] The reservoir would be designed to capture and recycle irrigation return-flow from farmers that would otherwise be wasted through drainage and runoff.[227] In exchange for its economic investment, Las Vegas would be allocated an amount of water equivalent to that captured by the new reservoir from Lake Mead, one of the principal water sources for surrounding states and municipalities.[228] Under the second option, Las Vegas would pay for the construction of a desalination plant in California, which would pump water into Tijuana and Mexicali.[229] In exchange, Las Vegas would have access to a portion of Mexico's stake in the Colorado River.[230]

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219. *See id.* (highlighting the concern for Las Vegas, Nevada).

220. *See id.* (stating Nevada's allowance under the compact).

221. *Id.* (recognizing Nevada's population expansion).

222. *See id.* (stressing the water use and shortage problem).

223. *See id.* (reporting that the head of the Southern Nevada Water Authority would consider the compact broken if Nevada could not be accommodated).

224. *Id.*

225. *Id.*

226. *Id.*

227. Matt Jenkins, *Colorado River States Reach Landmark Agreement*, HIGH COUNTRY NEWS (Feb. 20, 2006), http://www.hcn.org/issues/316/16111.

228. *See id.* (discussing Las Vegas's agreement to build a reservoir on the California-Mexico border to trap runoff water in return for an equal amount of water from Lake Mead).

229. *Id.*

230. *Id.*

B. *The Seven Basin States' Interim Guidelines*

Another example of an effective collaboration effort was codified in the 2007 Colorado River interim guidelines—a water transfer and conservation agreement created under the supervision of the United States Secretary of the Interior.[231] The interim guidelines mandated water reduction plans in response to long-running drought conditions afflicting the seven Colorado River basin states.[232] The interim guidelines were an attempt to balance all of the competing interests among the basin states through novel collaborative approaches and the skillful maneuvering of existing laws.[233] The agreement was signed by all seven of the basin states and represented a "remarkable achievement by parties that have not always gotten along regarding management of the Colorado River."[234] For example, under the interim guidelines, states may enter into side agreements with one another to share in the burdens of the proposed water reductions.[235] Further, if the side agreements become untenable due to further drought conditions, the guidelines allow for the states to renegotiate the terms with the Secretary of the Interior.[236]

One particularly remarkable element of the new interim guidelines was the creation of the "Intentionally Created Surplus" (ICS) water allocation program.[237] ICS water is water that a contractor, with authority from the

231. *See* U.S. DEP'T OF THE INTERIOR, WASH., RECORD OF DECISION: COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES AND THE COORDINATED OPERATIONS FOR LAKE POWELL AND LAKE MEAD 1 (Dec. 2007), *available at* http:// www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf (delineating the interim guidelines).

232. *See* Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 966 (2008) (citing the "basin states" as Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming).

233. *See id.* at 975–76 (noting that certain statutory limitations may be set aside by an agreement between states in order to encourage an increased supply of water that can either be retained by an individual party or exchanged between parties).

234. *Id.* at 965.

235. *See id.* at 972–73 (commenting that the new guidelines require "stepped Secretarial shortage determinations," which are water reductions (a total of 500,000 acre-feet) the states must submit to when water in Lake Mead is reduced to a specified level, and of the seven states concerned, Arizona and Nevada alone must share the entire burden of any water reduction in Lake Mead). Under an international treaty, the United States is required to send 1.5 million acre-feet of water from the Colorado River to Mexico each year, with a proviso that the amount could be reduced in times of severe shortage. *See id.* (emphasizing that Arizona and Nevada entered into a side agreement whereby Arizona bears the burden of virtually all of the stepped reductions in exchange for Arizona being the principal beneficiary of a reduction in delivery of water to Mexico if the United States invokes the proviso in the treaty).

236. *See id.* at 973 (allowing the terms to be renegotiated).

237. *See id.* at 975 (outlining four categories of Intentionally Created Surpluses).

Secretary of the Interior, "creates by conservation, supply augmentation, or similar measures."[238] ICS water can be created in a variety of ways, including "fallowing irrigated land, lining canals to stop seepage loss, and desalination of ocean or brackish water that is used in lieu of mainstream water."[239] ICS water can also be purchased or introduced from another water source that is not naturally a part of the Colorado River system.[240] Creation of ICS water then enables the creator to store the water for later use.[241]

One difficulty with the ICS program is that under a decree from the United States Supreme Court (the "*Arizona v. California* decree"), any water stored in Lake Mead, Lake Mohave, and Lake Havasu is subject to stringent apportionment guidelines that apply to several of the basin states.[242] This means that all ICS water stored in Lake Mead, for example, would be apportioned among all entitled appropriators, which would disincentivize any party from conserving or augmenting the supply of water.[243] Under the interim guidelines, however, five percent of ICS water is "subject to the *Arizona v. California* decree[,]" leaving the contractor ninety-five percent.[244]

Another remarkable aspect of the new interim guidelines is that they encourage states to "waive their rights under the *Arizona v. California* decree."[245] The states' forbearance under the hard-won decree will encourage the increased creation of ICS water, which will in turn increase the overall water levels of Lake Mead and Lake Powell, benefitting all of

238. *Id.*

239. *Id.*

240. *See id.* (summarizing purchases).

241. *See id.* ("For example, a California contractor might take 25,000 acre-feet less from Lake Mead than it otherwise would because of land fallowing or canal lining and in return would receive an ICS storage credit in Lake Mead that it could draw on later.").

242. *See* Arizona v. California, 547 U.S. 150, 153–54 (2006) (holding "the water in Lake Mead, Lake Mohave, Lake Havasu, and all other water in the mainstream below Lee Ferry and within the United States" will be apportioned among Arizona, California, and Nevada); Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 976 (2008) ("Applied literally, 'the water in Lake Mead' includes any water that is there due to a contractor's ICS activities.").

243. *See* Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 976 (2008) (creating a hypothetical situation in which, under the *Arizona v. California* decree, a California contractor would not have full rights to the 25,000 acre-feet it created and stored in Lake Mead, but instead "could only take half of it, and contractors in Arizona and Nevada could together claim the other half").

244. *Id.*

245. *Id.*

the states that draw from it.[246] Arizona, California, and Nevada will benefit substantially from sharing the ICS water that everyone is entitled to under the *Arizona v. California* decree, and any ICS water they create on their own.[247] With these novel twists in customary water allocation, the interim guidelines created a regulatory scheme that is not only fair and efficient, but one that could actually increase water levels in times of drought.[248]

The agreements within the interim guidelines could be a valuable tool for the dispute between Highland Lakes and the Rice Producers Group. The basin states proved that it is possible to set aside differences and even traditional water allocation laws to reach a mutually beneficial agreement.[249] The interim guidelines demonstrated that collaboration is essential when a regulatory body enters the negotiation process.[250] Some of the last-minute amendments to the 2012 WMP shocked the parties, and no one appeared satisfied with the final agreement.[251] Knowing the LCRA was developing the new WMP should have incentivized the Rice Producers Group and Highland Lakes to reach a more efficient and equitable agreement.[252] If Highland Lakes and the Rice Producers Group

246. *Id.* (contrasting the differing treatment of ICS water before and after the new interim guidelines and highlighting the incentives created under the new guidelines).

247. *See id.* at 966–67, 977 (dividing the basin states and providing the differences from the division).

248. *See id.* at 976–78 (describing the ways water could be increased).

249. *See id.* at 965 (acknowledging the remarkable achievement the collaboration between the basin states represented considering the history of disagreement of the Colorado River management).

250. *See id.* at 979 (highlighting the incentives for the basin states to reach an agreement created by the Secretary's intent to develop guidelines and stressing the genius of the innovative elements the negotiation produced).

251. *See* Terrence Henry, Few *Satisfied with New LCRA Water Plan*, STATEIMPACT TEXAS (Feb. 22, 2012, 10:14 AM), http://stateimpact.npr.org/texas/2012/02/22/few-satisfied-with-new-lcra-water-plan/ (reporting that most parties to the current dispute were disappointed in the new water management plan). If both parties were made worse off by the plan, they have failed to achieve Pareto efficiency. *See* Gary Lawson, *Efficiency and Individualism*, 42 DUKE L.J. 53, 85 (1992) (outlining Pareto efficiency).

252. *See* Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 979 (2008) (noting when the Secretary of the Interior asked the seven basin states for input in developing the interim guidelines, the states were incentivized to reach an agreement). This is not to suggest that the parties made no attempt at agreement or compromise. All interested parties spent a great deal of time and energy attempting to flesh out a workable agreement. *See* Terrence Henry, *LCRA Passes New Water Plan: More Water for Lakes, Less for Farming*, STATEIMPACT TEXAS (Feb. 22, 2012, 3:49 PM), http://stateimpact.npr.org/texas/2012/02/22/lcra-passes-new-water-plan-more-water-for-lakes-less-for-farming (heralding the long negotiation that produced the current proposed compromise). The end result failed to meet expectations; ostensibly, this suggests a better arrangement is still possible. *See id.* (analyzing the current agreements and plans).

had been able to reach a mutually beneficial compromise, a closer iteration of that agreement would have likely found its way into the new WMP rather than the surprising and disappointing plan the LCRA ultimately proposed.[253] Accordingly, a lack of collaboration between parties will disable the ability of a regulatory body to facilitate innovative and efficient solutions.[254] As Professor Grant succinctly summarized:

> The Secretary [of the Interior] could not have implemented an ICS program by regulation alone. No water contractor would have much incentive to develop a conservation or augmentation project that uses Lake Mead for storage without a forbearance agreement in place to avoid literal application of the *Arizona v. California* decree. The Secretary could not have imposed forbearance on the Lower Division states and contractors by regulation, so their collaboration was essential to the ICS program.[255]

The success of an experimental collaborative scheme depends on effective regulatory oversight.[256] Since the LCRA is deeply entrenched in the present conflict, it must carefully consider the "types and forms of participation by interested parties, stakeholder group composition, the decision rule, and the role of the convenor in facilitating decision making."[257] The LCRA needs sufficient oversight to ensure that the goals of the regulation are being met.[258] There "must be some measureable clarity as to the purposes of the regulatory program at the outset" in order for the scheme to effectively meet its goals.[259]

C. *Critiques of Collaborative Agreements*

Despite the relative success of the interim guidelines among the basin states, some skepticism regarding the efficacy of collaborative water transfers remains.[260] Many view collaboration as "a peaceful, non-

253. *See* Douglas L. Grant, *Collaborative Solutions to Colorado River Water Shortages: The Basin States' Proposal and Beyond*, 8 NEV. L.J. 964, 979 (2008) (suggesting many of the provisions adopted by the interim guidelines came from the collaborative efforts of the individual states and would not have been adopted absent such agreement).

254. *Id.* (recognizing the Secretary's lack of authority to implement the innovative ICS program without an agreement from the affected states).

255. *Id.* at 979–80.

256. *See generally* Alejandro E. Camacho, *Beyond Conjecture: Learning About Ecosystem Management from the Glen Canyon Dam Experiment*, 8 NEV. L.J. 942, 963 (2008) (promulgating the importance of integrating institutional regulatory programs into collaborative programs to continue to meet goals).

257. *Id.*

258. *See id.* ("Simply leaving collaborative and adaptive approaches to the vagaries of improvised politics is a sure-fire way to ensure that the regulatory innovation does not succeed.").

259. *Id.*

260. Jean R. Sternlight, *Introduction: Collaboration Good or Bad: How is it Working on the Colorado*

litigious means of resolving disputes that can be quicker, better, and more effective than alternative approaches such as litigation or top-down orders."[261] However, some critics worry collaboration allows more powerful parties to subvert the legal system and strong-arm the weaker parties.[262] One scholar notes that the Colorado River collaborations upstream in the United States caused the decline of the Colorado River Delta, a fragile and highly valuable ecosystem in Mexico.[263] Another scholar suggests collaborative solutions can only arise from "legal destabilization"—chaotic events where traditional legal systems are broken down or destabilized—forcing parties to develop novel allocation solutions.[264]

Regardless of any disagreement and doubt, most scholars agree collaboration efforts along the Colorado River represent a bright future for water allocation.[265] In fact, many states are presently experimenting with

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River?, 8 NEV. L.J. 803, 803 (2008) (fearing collaborative agreements do not protect the interests of weaker parties or the environment).

261. *Id.*

262. *See id.* (introducing the opinion of some critics).

263. *See* Bret C. Birdsong, *Séances, Cienegas, and Slop: Can Collaboration Save the Delta?*, 8 NEV. L.J. 853, 853 (2008) (warning some collaborative decisions benefiting upstream Colorado River Basin users can cause ecological damage to fragile ecosystems downstream, and "solutions reached by collaborative processes are not necessarily beneficial for the environment or for those constituencies that promote or benefit from its protection"); *see also* Joseph M. Feller, *Collaborative Management of Glen Canyon Dam: The Elevation of Social Engineering over Law*, 8 NEV. L.J. 896, 898, 935 (2008) (arguing collaborative decision-making subverts statutory hierarchies of water use, which leads to noncompliance with the Endangered Species Act, and that collaboration often resulted in a "shift in management direction from the requirements of the law to the needs and desires of the stakeholders").

264. *See* Bradley C. Karkkainen, *Getting to 'Let's Talk": Legal and Natural Destabilization and the Future of Regional Collaboration*, 8 NEV. L.J. 811, 812–13 (2008) (citing Charles F. Sabel & William H. Simon, *Destabilization Rights: How Public Policy Law Litigation Succeeds*, 117 HARV. L. REV. 1015 (2004) (announcing how the approach began and arguing it could work in environmental and natural resource law: once the situation along the Colorado River is brought "to the brink of disaster[,]" a destabilization event could then occur that will allow for a new system to be built from the remains)). *But see* Kirk Emerson, *On Perfect Storms and Sacred Cows of Collaboration, Comments on Bradley Karkkainen, Getting to 'Let's Talk": The Legal and Natural Destabilizations and the Future of Regional Collaboration*, 8 NEV. L.J. 830, 831–32 (2008) (arguing that the complexities of the legal systems and other institutions along the Colorado River would make a viable destabilization event unlikely, and the occurrence of such an event would not "guarantee that collaboration would lead to better and more enduring institutional arrangements, or ones that can be implemented and sustained"); *cf.* Carrie Menkel-Meadow, *Getting to 'Let's Talk": Comments on Collaborative Environmental Dispute Resolution Processes*, 8 NEV. L.J. 835, 839 (2008) (cautioning against the belief that collaborative processes spurred by destabilization will produce a "win-win" outcome because collaborative processes are not always capable of producing such a result).

265. *See* Patricia Mulroy, *Collaboration and the Colorado River Compact*, 8 NEV. L.J. 890, 895 (2008) (opining that the collective experience of the Colorado River's seven basin states "demonstrates the

a variety of collaborative means of water allocation.[266] For example, Colorado, Idaho, and Oregon have implemented water-banking systems whereby "water rights are deposited in the bank and available for withdrawal for a fee."[267] Water banks are often used to carry out temporary water transfers between irrigators and other users.[268] Use of water banks would be especially valuable to Highland Lakes and the rice producers because they allow "those who do not need the water in a particular year to grant it to others without forfeiting their water rights."[269]

As long as Highland Lakes and the Rice Producers Group heed the mistakes and failures of poorly conceived collaborative efforts, and the LCRA provides competent and balanced regulatory guidance, the experiences of the seven basin states should stand as an effective template for resolving the current dispute.

V. CONCLUSION

There is no easy solution to the problem facing Highland Lakes and the Rice Producers Group. Even a cursory glance of the literature on the economics of water transfers indicates that attempts to alleviate conflict or enhance the efficiency of exchanges often create more problems. Agricultural water appropriators can be stubborn and reluctant to embrace changes in their long-held rights, while expanding cities demand more and more of the resource. Additionally, current appropriation methods are highly inefficient. Market-based solutions are touted as the solution, but their implementation often creates its own unique set of inefficiencies.

No single theory or model will penetrate the complexities of all water transfer disputes. But a carefully considered combination of the theories,

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profound value of working together to resolve seemingly intractable problems rather than resorting to litigation or the kind of protracted conflict or competition that results in winners, losers, or nothing at all," and through balancing competing needs and reaching collaborative solutions, "the seven basin states are setting new standards for resource management"); Jean R. Sternlight, *Introduction: Collaboration Good or Bad: How is it Working on the Colorado River?*, 8 NEV. L.J. 803, 810 (2008) (hoping working together will help to resolve problems effectively).

266. *See* Sandra Zellmer, *The Anti-Speculation Doctrine and Its Implications for Collaborative Water Management*, 8 NEV. L.J. 994, 1019 (2008) (surveying the use of market-based collaborations in several Western states including Colorado, Idaho, and Oregon).

267. *Id.*

268. *See id.* (pointing out the bank system allows irrigators to grant water rights they do not need in a particular year to others without forfeiting the water rights permanently).

269. *Id.* (citing Janet C. Neuman, *Drought Proofing Water Law*, 7 U. DENV. WATER L. REV. 92, 104 (2003)).

models, and plans discussed above could bring Highland Lakes and the Rice Producers Group closer to an efficient and equitable resolution. A drastic, sweeping Chilean-style renovation of Texas water law is likely to fail; but the implementation of select market principles in individual water markets, such as Highland Lakes, could gain traction.[270] If litigation ensues, Texas courts could use the Cathedral model and tort liability principles to guide the parties toward fairer rulings that can maximize the use of the resource. Most importantly, the parties must be willing to accept solutions that will reward sacrifice, patience, and the forbearance of outdated entitlements.

During the writing of this Comment, the LCRA announced that most water for interruptible agricultural customers would be cut off for 2013.[271] After cutting off most downstream rice farmers, water use in Central Texas was reduced by 45-percent from 2011.[272] If the full allotment of Highland Lakes water was sent to rice farmers downstream, lake levels could drop from the current 39-percent to less than 20-percent full.[273] Such a drop would undoubtedly spell disaster for the Highland Lakes residents, as well as the City of Austin and other municipal users.[274]

The LCRA is considering similar emergency drought measures for next year, meaning rice farmers may go three straight years without water for crops.[275] This possibility raises serious doubt as to the ability of the South Texas rice farming industry to survive another year.[276] Shockingly, 144,759 acre-feet of water—more than the amount used by the City of Austin in a year—evaporated from Highland Lakes in 2012.[277] While a long-standing Texas industry is literally drying up, an entire city's-worth of water vanished from its source. Without a radical change, this water crisis, wrought with its increasing waste and dissatisfaction, is likely to be

270. It would ultimately be up to the parties to experiment and negotiate as to which market principles to apply.

271. *See* Terrence Henry, *After Rice Farmers Cut Off Last Year, Water Use Cut in Half in Central Texas*, STATEIMPACT TEXAS (June 11, 2013, 2:43 PM), http://stateimpact.npr.org/texas/2013/06/11/after-rice-farmers-cut-off-water-use-cut-in-half-in-central-texas (discussing the cut off).

272. *Id.* (providing graphs of water usage).

273. *Id.* (explaining the possible effects).

274. *Id.* (suggesting Austin would likely suffer curtailments of their water supply if lake levels dropped below 20 percent).

275. *See id.* (mentioning the LCRA's new plan).

276. *See* Terrence Henry, *After Rice Farmers Cut Off Last Year, Water Use Cut in Half in Central Texas*, STATEIMPACT TEXAS (June 11, 2013, 2:43 PM), http://stateimpact.npr.org/texas/2013/06/11/after-rice-farmers-cut-off-water-use-cut-in-half-in-central-texas (opining on the rice farming industry's future).

277. *Id.*

ongoing for many more years. Allowing the fight to continue on, without a sharp eye toward economic efficiency and equity, will be disastrous for all who depend on the lower Colorado River.

Fortunately, the LCRA approved plans to construct several reservoirs southwest of Houston to help provide needed water to South Texas rice farmers.[278] Upon completion, the reservoirs could provide up to 90,000 acre-feet of water each year to rice farmers.[279] The reservoir project would also alleviate a substantial burden upon the City of Austin and other municipal users.[280] This project, if fully realized, is an example of the type of collaborative solution for which this Comment is advocating. Hopefully, rice farmers, the City of Austin, Highland Lakes residents, and all other parties who rely on Lower Colorado River water will find useful the legal and economic theories compiled in this Comment as the reservoir project commences.

278. *See* Matthew Tresaugue, *Board Approves Reservoir to Help Rice Farmers*, HOUS. CHRON. (Jan. 16, 2013, 9:45 PM), http://www.chron.com/news/houston-texas/houston/article/Board-approves-reservoir-to-help-rice-farmers-4199652.php (noting the LCRA's efforts).

279. *Id.*

280. *Id.*

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