Technical and Physical Feasibility Fact Sheet
Alternative 59: Severance Tax

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1. Definition of Alternative

A-59: Establish a state-based water severance tax for water projects, planning, and conservation.

2. Summary of the Alternative Analysis

A state tax on the consumptive use of water would generate revenue necessary to fund regional water projects, planning efforts, and conservation programs. Water tax policy includes consideration of a tax base and a tax rate. The policy should clearly define what is subject to tax, how the tax program works, and demonstrate uniformity in administration across taxpayers.

The value of water varies today across different water users and different sources of water. Because there is no "true" value for water in the Middle Rio Grande (MRG) planning region and this value cannot be readily determined, it is not advisable to tax the value of water. Instead, the water tax should be applied to the volume or quantity of water used.

A water tax rate should consider issues such as total revenue requirements, fairness among water users, and impact on consumers and businesses. Such a tax would likely be cyclical, fluctuating with meteorological conditions. Since the supply of water is physically and legally constrained within the MRG planning region, a quantity-based water tax would show no growth in water tax revenues over time, unless the water tax rate is periodically increased.

A water tax rate of $100 per consumed acre-foot would raise $20.4 million per year in the MRG planning region. Based on regional consumptive use quantities reported in Wilson(1997)[1] , the agriculture sector would pay $9.61 million (approximately $232 per irrigated acre), while public

water supply users would pay $8.47 million (approximately $31 per household), which represents approximately a 10 percent increase in Albuquerque's current water commodity charge. The tax rate on water uses that deplete the aquifer should be higher. However, determination of groundwater withdrawals that result in aquifer depletion would have to be determined in order to assess a higher tax for those withdrawals.

Implementation of this alternative would require metering of all water uses, including agriculture and self-supplied domestic water users (see fact sheet for A-7, *Agricultural Metering*). Using the consumed quantity of water as a tax base would require estimation of consumptive water use among farmers with different crop patterns and irrigation practices. Who would pay the water tax on reservoir evaporation would have to be determined.

2.1 Tax Base and Rate

Any state tax involves the definition of a tax base (what is to be taxed) and a tax rate (how much of the tax base is paid as a tax). For example, the property tax base is the taxable assessed value of a house and the property tax rate is the mill levy ($1 per $1,000 of taxable assessed value) as determined by the city, county, school district or other property tax authorities. The property tax base, that is, the taxable assessed value of the house, is further defined under New Mexico statute as one-third of fair market value less allowable exemptions such as the head of household and veterans' exemptions. The gross receipts tax base is the value of goods and services, defined as taxable by statue, while the gross receipts tax rate is some percentage of the value of those goods and services. The state gasoline tax base is gallons of gasoline purchased times a levy ($0.16) per gallon of gasoline.

There are some subtle distinctions in these examples of tax bases and tax rates. In the case of gasoline, for example, the tax base is a volume or quantity measure (gallons of gasoline), while in the case of property and gross receipts, the tax base is a value measure (the value of the house or the value of goods and services purchased). Over time, a quantity tax base increases only as the quantity or volume of the commodity increases, while a value tax base increases as both the quantity and the price (inflation) of the good increases. In the case of property and gasoline, the tax rate is defined as a set dollar amount per tax base unit—$1 per $1,000 taxable assessed value and so many cents per gallon of gasoline, respectively. In the case of gross receipts (and income), the tax rate is defined as a percentage of the value of the tax base.

The tax base should also be well defined, easily understood, and uniform across taxpayers. In the case of water, the tax base could be either the value of water consumed or the quantity of water consumed. However, the value of water is not uniform across all users, and as discussed in the fact sheet for A-21, *Urban Water Pricing*, the true economic value of water does not exist and cannot be determined in the MRG planning region. The quantity of water consumed would be more reasonable to establish as a tax base, although it too is problematic. For example, agricultural water use is not currently metered, and the consumptive use of agricultural water depends upon the type of crop (see fact sheet for A-11, *Low-Water Crops*) and irrigation methods. Also, it would be difficult to identify the taxpayer in the case of reservoir evaporation and in-stream uses of water for endangered species.

2.2 Policy Issues

There are several policy options when establishing a tax rate for water, all of which should consider issues such as revenue requirements, fairness, and impact on water consumers. First, the need for revenue is the primary driver of all tax rates, and the level of the water tax rate (for example, number of dollars per consumptive acre-foot) should be based upon the revenue needs of the MRG planning region for water projects, planning, and conservation. Second, the tax rate could be a constant rate, a declining block rate (by volume of water usage), or an increasing block rate (by volume of water usage). Also, the tax rate could be set at a different level for different water users (e.g., agricultural use, municipal use, or industrial use), and at a different level for different water planning regions within the state.

Some attention must be paid to who collects, distributes, and enforces a state-based water tax. Ease and uniformity of administration should guide this decision. As with the gross receipts tax, the water tax could be administered by the State of New Mexico. The state would collect the tax and distribute it back to water planning regions based upon the appropriate measure of the region's tax base and tax rate. Or, as in the case of the property tax, a local government could administer the water tax for the local water planning region. It is also possible, as a state-based water tax, that the State of New Mexico would not only collect the water tax but also decide how the water tax revenue was spent. Under this latter scenario a particular water planning region would not necessarily receive all the water tax revenue collected within that water planning region for water projects within the region.

A quantity tax base such as consumptive water use in gallons or acre-feet appears to be the most feasible approach to a water tax. However, such a tax base implies that the water tax revenue source will be cyclical based upon the meteorological cycle. During wet years the amount of water consumed would increase, as would water tax revenues, while in dry years the amount of water consumed would decrease, as would water tax revenues. This built-in cyclical nature of water tax revenues may make it difficult to issue water bonds to finance water capital projects that depend on water tax revenues to pay the debt service. The cyclical nature of water tax revenues would also make it difficult to project future water tax revenues with acceptable accuracy. Finally, since the supply of water in the region is physically constrained in the long run, with a quantity tax base there would be no growth in water tax revenue over time, unless the water tax rate is periodically increased.

A final consideration in the discussion of a state-based water tax is the need for budgeting and management of this new revenue stream. Regional water management would require funding of capital-intensive water projects as well as funding of recurring activities such as water planning and conservation. Some of the water tax revenue would be needed to provide debt service of bonds, issued to finance large capital projects. Other parts of the water tax revenue would be needed to fund annual, recurring expenditures for water planning and conservation efforts. A water management authority would be needed to make these budgetary decisions on behalf of water users and residents of the region.

How much tax revenue can be raised from a water tax in the MRG planning region? To answer this question, we must start with the assumption that the tax base is “all water consumed in the region by all water users.” Table 59-1 provides information about total water depletions (consumptive use) by county and type of water user for the MRG planning region. Total consumptive use in 1995 was 204,701 acre-feet, including both surface and groundwater use. Irrigated agricultural and public water supply accounted for the bulk of water consumption in the region; the former consumed 94,577 acre-feet, while the latter consumed 84,880 acre-feet.

Table 59-1. Water Use By County, Total Depletions 1995 in the Middle Rio Grande Planning Region

Category	Bernalillo	Sandoval	Valencia	Total
Public water supply	70,224	12,490	2,166	84,880
Domestic (self-supplied)	1,084	1,210	1,651	3,946
Irrigated agriculture	20,851	17,684	56,042	94,577
Livestock (self-supplied)	753	353	664	1,770
Commercial (self-supplied)	2,447	502	702	3,650
Industrial (self-supplied)	205	361	21	586
Mining (self-supplied)	90	4	2	96
Power (self-supplied)	163	---	---	163
Reservoir evaporation	---	15,033	---	15,033
Total	95,817	47,637	61,247	204,701

Source: Wilson et al., 1997.

For illustration purposes only, assume that the water tax rate is $100 per consumed acre-foot, which is $0.000307 per gallon of water. Based upon total water consumption of 204,701 acre-feet, a broad-based tax on all regional water consumption would raise $20.4 million per year. The agricultural sector would pay 47.1 percent of this total, or $9.61 million per year, while public water supply users would pay 41.5 percent of the total, or $8.47 million per year. There are approximately 41,494 acres of irrigated farmland in the Middle Rio Grande region so that this annual water tax of $100 per consumed acre-foot would represent a tax of $232 per acre of irrigated agriculture.

In the City of Albuquerque the current water commodity charge in the winter months is $1.1934 per unit of water (748 gallons of water). This water commodity charge is based upon gross withdrawal rather than consumed water use, however. Assuming a 50 percent return flow credit in urban water use, this annual water tax of $100 per consumed acre-foot would require a $0.1148 increase in the water commodity charge per unit of water in the City of Albuquerque.

In setting water tax policy state policymakers would have to consider other issues. For example, the agricultural sector is generally a lower income-producing sector than the public water supply sector. Does the agricultural sector have the same “ability to pay” as the public water supply sector? Should the water tax rate be the same for agricultural water use as it is for

public water supply use? There is also a question about how the state would collect the water tax on self-supplied water users, shown in Table 59-1. Domestic, self-supplied wells are generally not metered so that consumptive use for these water users may have to be estimated. Reservoir evaporation accounted for 15,033 consumed acre-feet in the MRG region, or 7.3 percent of total water use, in 1995. It is not clear how the state would collect a water tax on this water use, and who would pay the water tax on reservoir evaporation. Agricultural water use is not generally metered in the MRGCD, and metering would determine only gross water withdrawals. Consumptive use in agriculture is a function of crop patterns and irrigation technology. How would the state determine consumptive water use on a farm-by-farm basis?

As an alternative, the state could choose a water tax base of gross water withdrawals. Metering would be required, but would more accurately measure the volume of water use for a specific water user. However, a tax on gross water withdrawals would set up incentives to reclaim, recycle, and reuse water within a public water supply system or on an individual farm in order to minimize the water tax paid. This would affect the traditional patterns of return flow within the river system and would affect downstream water users. Also, the ratio of water consumed to gross withdrawals varies by water users so that in the end, with a gross water withdrawal tax base, some water users would pay a higher tax rate per water consumed than others.

Finally, for instances of groundwater mining within the MRG region, the state should set a higher tax rate on such water consumption in order to provide economic signals to users of mined groundwater so that the “in-situ” services of groundwater are recognized.

3. Alternative Evaluation

3.1 Technical Feasibility

Enabling New Technologies and Status

This alternative would require new state legislation authorizing such a new water tax. Such legislation should also address who collects the tax and to whom it is distributed. The proposed tax is straightforward and all technical issues are well understood by tax professionals. Determining taxable groundwater depletions would require technical studies.

Infrastructure Development Requirements

The alternative would require setting up the taxation and assessment entity and would require metering of all water uses.

Total Time to Implement

It would take one to two years to enable state legislation and appropriate funds to set up the administrative entity or incorporate new division or staff into an existing entity.

3.1.1 Physical and Hydrological Impacts

Effect on Water Demand

A water tax could reduce water demand, since the after-tax price of water would increase for all users. However, the demand for urban water is price inelastic so that a 10 percent increase in the after-tax price would cause only a 1 percent decrease in water demand. The price responsiveness of water demand in agriculture is unknown, since current agricultural water use is not metered and farmers face a $0 marginal price. Indirectly, the water tax could fund other water planning projects, such as conservation measures, which would reduce water demand, ultimately reducing tax revenues

Effect on Water Supply (surface and groundwater)

There would be no direct effect; however, a water tax would provide funding for water projects, which could expand the regional water supply.

Water Saved/Lost (consumption and depletions)

Water savings would come through the reduction in water demand. The actual amount of water saved would depend upon the level of the new water tax. Indirectly, the water tax would lead to water savings via water plan projects that reduce demand or increase supply.

Impacts to Water Quality (and mitigations)

No direct impacts.

Watershed/Geologic Impacts

No direct impacts.

3.1.2 Environmental Impacts

Impact to Ecosystems

Water savings could be used to maintain riparian habitat. Funds generated by the water tax could be used to purchase water rights dedicated to ecosystem protection (in-stream flow). Alternately, funds generated could be used to fund ecosystem protection and enhancement projects.

Implications to Endangered Species

Funds generated by the water tax could be used to purchase water rights dedicated to maintaining flows for endangered species. Funds generated could be used to fund projects to improve, enhance or protect endangered species habitat.

3.2 Financial Feasibility

3.2.1 Initial Cost to Implement

There would be an administrative cost for changing state legislation and for setting up tax administration agency or division within an existing program. Assuming that the administration of the water tax would require approximately 20 to 25 full-time employees, the annual budget for tax administration would amount to approximately $1.2 to $1.5 million.[2] Assuming a 10 percent increase in the average price of urban water ($0.00193 per gallon including surcharges; City of Albuquerque, 2002) in addition to the cost presented above, the cost to save 848 acre-feet (1 percent of total urban consumptive use in the three counties in the region) is approximately $8,000 per acre-foot.

3.2.2 Potential Funding Source

State and local governments.

3.2.3 Ongoing Cost for Operation and Maintenance

Ongoing tax administration cost, similar to current property tax administration in New Mexico. (See Section 3.2.1).

References

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[1] Wilson 1997 was used to determine total depletions in the region. Although 1999 depletions for agriculture and 2000 are available, a report with this information has not been published. Generally, the total depletions in the planning area decreased in 2000. However, the calculations of water tax revenues in this fact sheet are made only to illustrate potential revenue. Over time, total depletions can fluctuate due to climate conditions and implementation of conservation measures in certain sectors, and will cause tax revenues to fluctuate as well.

[2] This estimate is based generally on the annual operating budgets of existing property tax assessor departments within the planning region. However, these ranges are provided only to illustrate possible costs.