

# INSIGHT



## Work of the Strom Thurmond Institute

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# Land-Use Planning in South Carolina: *Conserving Rights, Resources, and Revenues*

The 1994 South Carolina Local Governments Comprehensive Planning Enabling Act requires South Carolina counties with zoning to develop comprehensive land-use plans by May of 1999. Jurisdictional planning boards, state and local economic development leaders, and state natural resource managers are currently working together, and in some cases in opposition, to incorporate a variety of land-use management initiatives into these new county land-use plans.

Difficult decisions on competing agendas for natural resource conservation and economic development in the state and its counties are currently being made and will continue to be made as the plans are implemented. Issues pertaining to rights are the most difficult to be resolved. At stake are *landowners' rights* to exclusive use of private land and *citizens' rights* to natural resource preservation on all land.

As attempts are made to keep the infringements of these rights to a minimum, efforts are also being undertaken by the state and its jurisdictions to make optimal use of each region's unique combination of *resources*, and do so in a manner that minimizes the need for tax *revenues*.

In an effort to contribute to planning for South Carolina's future, the Strom Thurmond Institute recently conducted a comprehensive review of information available to assess current land-use policy and predict land development in each of South Carolina's counties through the year 2020. The work identifies and describes over 300 demographic, economic, and environmental trend indicators and institutional land-use incentives that can be used to predict the 20-year pattern of growth in each South Carolina county under existing land-

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## Sean Blacklocke

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use management policies.

The Institute's intent is to provide state and local land-use decision makers with a more detailed and comprehensive picture of the existing and anticipated future geographic distribution of human, natural, and capital resources in the state and the policies influencing them. Anticipated from the effort are illustrations of lower-cost opportunities for enhanced protection of both public and private land rights and more beneficial utilization of the state's geographically diverse stock of resources.

The Institute's work can assist public policy makers in pursuing land-use policy alternatives that simultaneously conserve *all* South Carolinians' rights, resources, and revenues.

### ***Land-Use Planning in South Carolina***

Once the county plans are completed and approved, for the first time in the state's history the information needed to make a single projection about the geographic path of development in South Carolina will be available. The two-thirds of the state's counties that are developing land-use plans are conforming to a single format, one that assesses and plans for not only demographics and infrastructure, but also cultural and natural

resources. Thus, a compilation of these planning documents will allow for the most detailed picture of South Carolina's current and future landscape to date.

Although finalized county plans are not yet available for review, the Strom Thurmond Institute has initiated efforts to identify information that can be used in a statewide planning effort.

Specifically, time-series data for multiple categories of demographics have been identified and can be used to make a variety of original predictions about future population location and activity preferences in each county. The sort of county economic profile data used by potential business investors in assessing location and operating costs have been gathered and can be used to predict which counties or areas are most accommodating and therefore most amenable to new development. And, data from a variety of government organizations on many of the land parcels that will likely not undergo future development due to legal land-use restrictions have been compiled for each county and can be mapped for geographic identification.

Although some state-sponsored inter-jurisdictional infrastructure planning is currently under way, no single effort has been undertaken to project South Carolina's future landscape with federal, state, and local demographic, economic, and environmental planning data. The Institute's findings on state development trends and influences, refined with data from county comprehensive land-use plans, can provide a first-ever projection of the state's 20-year growth under existing land-use policy.

But, the purpose of the Institute's effort is not to simply obtain a projection of South Carolina's future development. Just as county planning efforts can better protect public and private land rights and help to maximize economic development and natural resource preservation while minimizing cost to taxpayers, so too can a statewide planning effort. Only a statewide assessment and projection has the potential to point out *geographical and*

*institutional planning inconsistencies* in achieving common land-use objectives.

Illustrating land-use trends and influencing policies that are inconsistent with the common statewide goals of conserving rights, resources, and revenues is considered the best first step in incrementally improving the current land-use policies that continue to disjoin South Carolinians.

### ***Conserving Rights***

South Carolina is developing at a rate above the national average. Thus, increasing is the potential for infringements on residents' entitlements to the exclusive use and enjoyment of private property and to the access and protection of public natural resources.

One of the obvious benefits of predicting and planning the state's development is the opportunity afforded policy makers dealing with land use to direct environmentally destructive land-use activities away from the most ecologically critical areas, thereby securing citizens' rights to access and to enjoy natural resources.

Another positive attribute of land-use planning is its potential for minimizing conflict between adjacent private landowners. Local land-use restrictions, mainly zoning ordinances, have historically been quite effective in geographically separating landowners that, as neighbors, would be sure to significantly detract from the exclusive use and enjoyment of one another's property.

Still, there is by no means a lack of conflict over how specific land parcels in South Carolina's counties should be zoned and then subsequently used. Either directly or indirectly, private landowners, administrators, legislators, judges, attorneys, and special interest groups in the state are drawn into these confrontations. It's not uncommon for each to contribute conflicting, fragmented, and incomplete scientific and economic "facts" to the decision-making process, sometimes inducing outcomes that are irrational,

illogical, and inequitable in retrospect.

The Institute's comprehensive assessment of the population, economy, natural resource stock, and prevailing land-use policy in each county is, in part, intended to provide an objective fact base upon which decisions concerning conflicting public and private land rights can be made. Whether they're rights to maximize financial gains from land rents or entitlements to enjoy abundant natural resources, identification of opportunities to better conserve *all* South Carolinians' land rights is the primary goal of the Institute's effort.

But, beyond providing further assistance to those charged with protecting both public and private property rights, this more intensive and comprehensive state growth assessment and land-use policy analysis aims to contribute to the pursuit of two other state goals:

1. Making better use of South Carolina's most valuable resources
2. Identifying opportunities for reducing state and local tax revenues

### *Conserving Resources*

South Carolina has a blend of human, capital, and natural resources that is unlike any in the nation. Even within the state, certain geographic regions have highly disproportionate amounts of the resources needed for urban and industrial development. Likewise, some areas of South Carolina harbor relatively large portions of the state's total wealth in natural resources.

County land-use planning encourages jurisdictions to evaluate their potentials to maximize returns to their available resources. Maximizing returns can mean placing heavy emphasis on land development (i.e. making use of underutilized land, labor, and utilities in areas endowed with proportionately large amounts of human and physical capital). But, it can also entail emphasizing conservation of natural resources (i.e. preserving large portions of

landscape in regions where environmental amenities are relatively scarce or highly valuable).

In South Carolina, new land-use planning requirements are directing counties to evaluate their resources and choose the path of development that will put them to their highest valued uses. With adequate information on how public and private resources truly contribute to individual wealth, residents could approve land-use plans that make optimal use of available county resources. But, in most if not all counties in South Carolina, this type of information has not been made available.

Furthermore, a false sense of local control is implicit in the county planning policy process. Most residents are not aware of many of the federal, state, and neighboring local land-use policies that can preempt or indirectly overshadow simple local zoning ordinances.

From the Institute's compilation of planning information, cause-and-effect relationships between resource uses and public benefits can be better demonstrated in order to illuminate more mutually beneficial resource conservation decisions. Also compiled are government land-use incentive programs that typically are not accounted for in county planning projections but are known to significantly influence land-use patterns.

Not every South Carolinian values all of the state's resources equally, as the personal wealth of individual citizens can be affected quite differently by changes in resource use. For instance, those who are unemployed or who work in the construction industry may gain additional wealth from a land-development opportunity that diminishes a scenic landscape. Retirees and gainfully employed outdoorsmen will likely suffer a loss from the development, albeit they very well may have benefited from similar previous development endeavors.

Still, in a given county at a given time, there does exist some combination of land-use designations

that yield maximum public benefit and minimum public and private land rights infringements. The goal of the Institute in pursuing its statewide planning effort is to assist counties in making land-use decisions that better approximate this optimum so that South Carolina may better conserve its most valuable resources.

### ***Conserving Revenues***

Just as South Carolina's resources are widely diversified and geographically non-uniform, so too are its land-use management institutions. As in most states, alterations of purely market-driven land-use decisions come from a myriad of federal, state, and local land-use incentive or restriction policies. Further complicating land-use planners' efforts to make the best use of jurisdictional resources with minimal impact to land rights is the competing nature of some of these policies. In fact, the lack of continuity between geographic and governmental land-use objectives can have a resounding toll on taxpayers.

The democratic system of government, by design, operates at a high level of inefficiency in its decision-making processes in order to maintain a balance of power. But, government as a single unit in its role in land-use decision making can reach levels of inefficiency well beyond purpose and reason.

Conflicts over resource uses between federal, state, and local officials not only often go unresolved, their conflicting policies governing these uses are sometimes simultaneously implemented because each often has some degree of unilateral power. This common lack of reconciliation and coordination between the different levels of government and neighboring governments often results in incongruous or even competing projects for things such as infrastructure and natural resource management.

The high cost of government pursuing conflicting goals is often even more evident within a single level of government. For instance, within state

governments, state agencies typically promote rights protection, natural resource conservation, *or* economic development. Although they typically are all chartered as individual administrations that will do all three at once, it's rare to find agencies that pursue their respective missions with a great deal of concern for how they detract from the missions of other agencies. Yet, it's an absolute certainty that they will, at least sometimes, detract from one another's pursuits.

Comprehensive land-use planning in South Carolina is in its infancy, yet conflicts over land-use in the state are by no means new. The ongoing saga of individual landowners wanting to fully enjoy their own private property but not lose shares of public resources can hardly be terminated in the state. But, opportunities do exist for better reconciling conflicting land-use policies between levels of government, between neighboring jurisdictions, and within government administrations themselves in South Carolina.

These government-sponsored programs to influence land use are financed with tax revenues, so more land-use programs with bigger budgets to defeat opposing land-use programs translates into more need for tax revenues. The statewide planning effort undertaken by the Institute aspires to assist in preventing such a trend from escalating in South Carolina in the wake of its first round of comprehensive county land-use planning. The Institute intends to illustrate inconsistencies in institutional land-use initiatives in South Carolina with the goal of assisting land-use policy makers in reconciling incompatible and competing agendas, the ultimate goal being to conserve South Carolinians' tax revenues.

### ***Conclusion***

The notion that the statewide planning effort embarked upon by the Strom Thurmond Institute can somehow uncover incremental land-use policy changes that will simultaneously expand the countywide and statewide resource base, reduce tax burden, and do so without further encroaching

on either public or private property rights may sound far-fetched. Yet, the approach taken by the Institute is the same tack other rapidly growing states are taking in their successful efforts to identify opportunities for simultaneously improving their state' economies and environments.

From a preliminary review of the available information on county populations, economies, natural resources, and land-use policies, it seems very likely that such opportunities currently exist in South Carolina. Three things are certain:

1. South Carolinians value their respective property rights differently
2. South Carolinians value their respective resources differently
3. South Carolinians value tax reductions

Opportunities for incremental land-use policy improvements are borne out of better information about preferences for land rights and resource value differentials. Tax reductions are borne out of

elimination of contradictory, self-defeating government administration. It's quite certain that, in its effort, the Institute will provide better information and illustrate conflicting policies. It follows that opportunities for better conserving rights, resources, and revenues in land-use policymaking in South Carolina can be borne out of the Institute's statewide land-use planning efforts.

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# Land-Use Conflicts on the Urban Fringe: *Causes and Potential Resolution*

## ABSTRACT

All the fuss about hog farms, loss of prime farmland, and urban sprawl has a common origin in the declining transport and communications costs that also drive globalization of the economy. It may not be inevitable that globalization would lead to the specific problems that have arisen in some communities on the urban fringe, but the overall pattern of conflicts about land use where rural meets urban is a logical consequence of dramatic declines in transport and communications costs during the last quarter century.

The paper, "Urban Use Conflicts on the Urban Fringe: Causes and Potential Resolution," can be accessed at <http://www.strom.clemson.edu>.

It explains why contemporary land-use problems on the urban fringe flow naturally out of globalization of the economy. Because the root causes of the conflicts lie with powerful historical forces, there is no feasible way to avoid conflicts. Still, it is in the rational economic interests of agricultural interests, suburban residents, and central city interests to strike some sort of *quid pro quo* deal by which the rate of land conversion at the urban frontier is managed. The paper examines the shape of such a deal, who might support it, and who could be expected to oppose it.

There seems little chance that a deal can be structured that all stakeholders in development on the urban fringe will voluntarily accept. The deal must be seen to make fiscal sense to local and state governments, and it must not endanger the collateral in land that is held by mortgage lenders.

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## James Hite



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Both these things represent fairly tough tests for any deal. Even if a prospective deal can pass these tests, it still faces a major impediment. The local development community, including the interests commonly represented in suburban chambers of commerce, has good reasons to oppose any deal as likely to deny opportunities for business growth. A deal will have to survive intense political opposition.

Hence, achieving a working deal will require great political adroitness; and the further along the process of urban sprawl, the greater the political adroitness required. With all the substantial impediments that lie in the way of a working deal to protect traditional rural land uses from urban encroachment, the prospects are for escalating land-use conflicts in the urban fringe, and the squeezing of traditional rural land uses into remote enclaves.

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# Property Rights, Markets, and Land-Use Planning

Sean Blacklocke's discussion of the current effort by counties to develop comprehensive land-use plans helpfully focused on a three-part challenge to be met: conserving rights, resources, and revenues. As Blacklocke explained, "Issues pertaining to rights are the most difficult to be resolved. At stake are landowners' rights to exclusive use of private land and citizens' rights to natural resource preservation on all land." Here we see the ancient tension between private ownership and public demands, the very tension that gave rise to Magna Carta in 1225 and the takings clause of the U.S. Constitution. The sanctity of private property rights, clearly enunciated in both cases, continued thereafter to be challenged when governments sought to satisfy the desires of a larger public.

This paper focuses solely on the private property rights issue and how it might be resolved by those charged to develop comprehensive land-use plans for S.C. counties. The paper proceeds by first discussing how property rights evolved, providing background on the social purpose served by private property rights and the market in conserving resources and allocating land use. This section is followed by a discussion of the takings issue, a topic that always surfaces when governments intervene in land markets. The last major section explores the eminent domain process that establishes a clear-cut mechanism for transferring land rights from private owners when governments seek to serve a public purpose.

## *Why Property Rights and Markets?*

Historians who seek to find origins of property rights generally travel back as far as records can

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## Bruce Yandle

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take them and still find private property rights. The institution was present long before anything like modern government existed. Governments, as we know them, did not create property rights. Just the reverse holds. People with property rights created governments, often for the purpose of protecting their natural rights to land and possessions. Of course, the governments they created often invaded other communities and took property rights away. And sadly, those governments powerful enough to protect the property rights of citizens were strong enough to destroy the same rights. However, in the process described, governments and evolved property rights show up in the same story.

What explains the fact that property rights are so fundamental to the human experience that they seem to have evolved with mankind itself? Fortunately, philosophers and others who have thought about this question a great deal offer some explanations. First off, property rights seem to have evolved in the presence of resources that became scarcer and more valuable. The sequence went like this: scarcity, property rights, and plenty. Just as John Locke explained in the Seventeenth Century, property rights reduced uncertainty and then strengthened incentives to work harder, since the person who produced the grain would own the harvest. With property rights, far more could be

produced from the same amount of land than would be the case otherwise. Property rights contributed to the creation and accumulation of wealth. Ordinary people understood this.

But while property rights contributed to economic wellbeing, economics determined partly when property rights would arise. If there are more beaver and salmon than enough to satisfy the needs of a growing tribe of people, there is little reason to devote time and resources to defining and protecting associated property rights. But when scarcity raises its head, the time comes when the gains from defining and protecting rights far outweigh the cost of doing so. At that point, private spheres of action emerge along with property, and, by the way, possessive forms in speech and writing.

By most accounts, property rights were first in the form of shared common property for families, clans, tribes, and well-defined communities. For example, long before the arrival of the Europeans, some Native American tribes had well defined community property rights to salmon fisheries and hunting grounds. Other tribes in the Pacific Northwest had property rights and laws that limited whaling and fishing. Those tribes that became settled and engaged in agriculture had private property rights to specific plots of land. Other migratory hunter/gatherer tribes saw land rights as an abomination, but exerted considerable effort in protecting their rights to particular animal herds that traversed large land areas. They wanted private property in bison herds, but public property in land.

Interestingly enough, the conquering Europeans destroyed the rights to private fisheries on the Northwest rivers and after converting the assets to public property almost decimated the salmon population. Even to this day, American citizens are not allowed to hold private property rights to in-stream salmon and other fisheries. And still today, governments are attempting to preserve salmon populations all in the name of natural resource conservation. This, by the way, is not the case in the United Kingdom, where private fishing associations own the rights to in-stream fisheries,

or in Iceland, Greenland, and the Ferro Islands where private netting rights are enforced. In those locations, fisheries have flourished, and in the United Kingdom related water quality has been maintained as well.

Something like the decimation of salmon occurred with the herds of American bison. Indeed, federal policy under President Grant attempted to force bison-hunting, anti-private property Native Americans on the prairie to embrace private property in land, live in houses, and abide by the European customs and traditions. The pressure to accomplish these changes increased significantly when gold was found on Indian lands. Finally in frustration at the tribes' refusal to abide by the policy, the president ordered the Army to imprison the migratory tribes or destroy them. A government strong enough to define and protect property rights destroyed the rights that had previously secured valuable assets. The bison herds so fiercely protected by the tribes were virtually destroyed by white men in search of meat and buffalo hides to market. The American Bison Society, an organization formed by New York businessmen, put a slightly better end to the story, at least for the bison. They bought a few surviving animals, making them private property, placed them on private land, and conserved the population. Today's American bison stock is genetically tied to those few survivors. We see the sequence again: scarcity, property rights, plenty.

### **Transferability and Markets**

Property that can be sold or transferred to another party represents a significant break in the spectrum where an asset moves from being common property to private property. But the transfer of property is costly. Transfer requires measurement, record keeping, and monitoring. The transfer of land outside existing families and tribes had to await the development of geometry, surveying, and secure record keeping. Even with that, the secure transfer of Western agriculture had to await the invention of barbed wire. Scarcity led to

inventions, property rights, and plenty. But transferability brought something else of great importance—markets and prices.

Today, owners of land, real estate agents, and urban planners may have little reason to even think about the social meaning of prices and land markets. Protecting the land, making the deal, and identifying unintended and unrecognized overall effects are enough to keep them busy. But Nobel laureate Friedrich Hayek gave a new meaning to prices and markets in 1948 when he first described the market as an information system, a process for coordinating human behavior. Throughout his life, Hayek attempted to show the superiority of the price system to any other coordinating mechanism for assembling and conserving valuable information. He emphasized time and place information, the kind that each individual living on the land brings to bear on a decision merely through buying and selling.

The fact that millions of people may be indirectly involved in local land-use transactions – without even knowing they are – points to the difficulty of replicating this information in a county planning office. Owners of land observe land prices, or obtain bids, that take into account expectations of future values determined by shoppers, homeowners, gasoline distributors, electricity producers, highway builders, expanding or contracting churches, and even the number of football games to be played at nearby universities. All of this and more become captured in the prices offered for particular plots of land. Attempts to assemble all this information and include it in a comprehensive plan is obviously impossible.

But the fact that many people might like to convert privately held land to a different use and can bid large amounts for the right to do so does not mean that an owner will be interested in selling. Two things relate to what some might term an irrational attachment to the land. First, land values are really determined by the prospects for happiness that go with the land. Those bidding to convert land form their estimates on the basis of values that others

attach to the prospective land use. Owners do the same thing. Yet the psychic wealth that comes from living on the home place may far exceed the bids that developers have to offer. The point here is often overlooked when citizens seek to affect how an owner might use her land or how they might assemble funds to purchase the rights. The fact that seemingly identical nearby land is selling for \$6,000 per acre has little bearing on the value a current owner may require when parting with her land. Voluntary market exchanges can settle the issue of what land is worth, but administrative hearings cannot.

### **Market Difficulties**

Unfettered land markets that enable competing buyers to form bids for land transfers from competing owners obviously allocate land to those who assign the highest value to it, including the person who chooses not to sell to anyone. But it is certainly possible that unfettered markets will make allocations that impose unwanted costs on neighboring landowners. After all a smelly hog operation might emerge in the middle of a residential community, if the interested buyers and sellers made the relevant transfer. A very long list of other potentially harmful effects allegedly not sensed by markets might be constructed without much difficulty.

But making such a list would be a waste of time. Ordinary people have understood this problem for centuries. The common law of nuisance operates as one mechanism for protecting landowners or occupiers from unwanted harms that spring from the land use of another party. The rule of law is simple: Every landowner or occupier has the right to enjoy reasonable use of her property. If someone else wishes to act in ways that might devalue this common law right, that party can negotiate with the owner and purchase the desired property or the rights to particular use of the property. Otherwise, even the uncaring are aware that common law is tough on polluters, unless statute writers limit the oversight of common law as has been the case here since around 1970. At common law, no property

rights holder has the right to impose unwanted costs on a neighbor.

Over time, of course, a massive set of regulations, ordinances, and statutes have evolved in many places to guard the general public and neighbors from unwanted harms. The legal environment protects communities from harm.

Since negotiations and suits are costly, land developers historically have assembled large parcels of land for specialized purposes and used covenants among land buyers to restrict certain uses and actions. Since the land developer understandably seeks to get as much as possible from the final development, the developer will logically seek to determine the mix of activities that maximizes the value of the complete development as that value is perceived by the budding community. Voluntary transactions among property rights holders help the developer to get the information needed to organize the land.

### **Eminent Domain**

But assembling large parcels of land is also costly, and many land-use controversies arise long after parcels are developed. In fact, one argument for land-use planning is based on the notion that foreseeing future harms or benefits and taking them into account by mandating specified activities is less costly to the community than resolving these problems in other ways. Those who favor this argument quickly acknowledge that a land-use plan does not generally receive unanimous community support. Those who favor such plans expect to gain from them in some important way. Those who object just as readily expect to lose. Controversy quickly enters the room when the announced public purpose collides with privately held rights.

This problem too has been understood for centuries, and liberal governments that begin with private ownership have always provided a mechanism for resolving the problem if a voluntary sale to government will not. If government is to take private property rights to serve a public

purpose, then, government should pay for the rights taken. Eminent domain is the constitutionally specified method for doing so.

When compared with normal market-based land-use transfers, eminent domain is clearly a blunt instrument. First, the decision to take or modify land rights is generally made by trustees of the public purse who are not spending their own money. Even the very best trustee is less likely to exert the same effort she would make in buying a home for her family as she might in condemning a home or activity that stands in the way of a new land-use plan. This suggests a tendency for plans affecting private land to be too expansive. Second, the amount of information assembled by even the best planning commission is apt to fall short of the quantity and quality of information that emerges in dynamic markets. Third, the planning process tends to be just that—an administrative process that follows prescribed steps that take time. New information that might alter a private land developer's actions may be missed as the planning process moves slowly from the data-gathering stage to the decision-making stage. And finally, an administrative decision taken to use eminent domain and pay market value for desired private rights does not lead to a voluntary transaction. "Market value" based on estimates by excellent appraisers may have little to do with the subjective value one might assign to the old home place.

Even though blunt, eminent domain is obviously a fairer and more effective way for public units to obtain transfers of private rights to land than simply taking the rights without any compensation. Most agree that it is not fair to require a few private citizens to bear the cost of providing widely dispersed public benefits. Eminent domain is effective in that the process provides incentives for public officials to ration their actions and then to generate less controversy than would be associated with a plan that simply mandates land use.

### **Final Thoughts**

Communities of people who seek to create and

conserve wealth will always develop mechanisms for managing land-use. Historically, these methods have included 1) private property rights and relatively unfettered markets operating under a rule of law, 2) corporate or gated communities where one owner initially plans an entire community and provides the bulk of community services, 3) regulations and statutes that prescribe how particular land will be used, and 4) planning and zoning schemes that define future land-use patterns. In some cases, of course, the four methods become intertwined to form the land control mechanisms seen in larger urban settings. Government plays an important role in each of the four mechanisms, moving from property rights enforcer in the first case to assembler of information and enforcer of plans in the last.

In liberal governments formed by sovereign people, constitutions recognize the sanctity of private land rights and provide a simple and fair mechanism for altering or transferring these rights. The eminent domain process is a mechanism that allows a larger community to obtain desired private rights by paying for them. The presence and use of the mechanism enables public purposes to be achieved without placing discriminatory burdens on a few holders of private rights.

As indicated at the outset, those charged with developing comprehensive land-use plans will encounter a difficult and often heated challenge.

Holders of private land rights expect their rights to be respected. After all, this is a fundamental role of government. Those who favor expanded provision of public benefits expect their political representatives to provide the related public property rights. At the heart of the controversy lies a wonderful opportunity, the opportunity to obtain gains from trade.

Those who desire an expansion of valuable public property rights will surely be willing to pay for the benefits they will receive. With funds provided through taxation, public officials can then compensate the holders of private rights when those rights are transferred voluntarily. Then, if voluntary transfer is not forthcoming, public officials can use the power of eminent domain to compensate owners when their rights are taken. If voluntary transfer is achieved, both buyer and seller can enjoy gains from trade. If eminent domain is applied, at least one party has gained, while the other suffers some loss. If the rights are simply taken without compensation, one group gains totally at the expense of those whose property rights are taken.

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# The Changing Landscape of the South Carolina Coast: *How Do We Measure It?*

South Carolina's landscape is changing. New homes and businesses are sprouting everywhere. Yet, do we know what this growth really means? The Strom Thurmond Institute recently has undertaken a number of studies on land use or land-use changes. One study looks at coastal ecosystem health and analyzes land-use change as it relates to increases or decreases in vegetation productivity. Another study assembled a matrix of more than 300 variables related to coastal growth to develop a model for growth prediction. Yet another, called the South Carolina Prime Lands Initiative, will assess farm, forest and privately held open space in juxtaposition with growth, urbanization, second-home development and changing market conditions. These studies all require a quantitative assessment of the changing coastal landscape in South Carolina. This assessment can only be accomplished by using computers and geographic information systems (GIS) software to perform a process called land-use, land-cover, change-detection analysis. The process provides maps of the changes.

Growth along the South Carolina coast in recent years has progressed at a rapid rate. With the baby-boom generation entering its retirement years, that swift rate of housing, economic development, and population growth will continue. While coastal counties such as Charleston, Georgetown, Jasper, and Colleton showed steady increases in population between 1970 and 1990, other coastal and near-coastal counties such as Beaufort, Berkeley, Dorchester and Horry experienced large if not phenomenal growth (Table 1).

Growing numbers of residents and tourists will put

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## Jefferey S. Allen

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Table 1. Population Change in Coastal and Near-Coastal Counties from 1970 - 1990.

County %Change	Population 1970	Population 1990
Beaufort 69	51,136	86,425
Berkeley 129	56,199	128,776
Charleston 19	247,650	295,039
Colleton 24	27,622	34,377
Dorchester 157	32,276	83,060
Georgetown 38	33,500	46,302
Horry 106	69,992	144,053
Jasper 30	11,885	15,487

added pressure on the land and all coastal resources as well as create changes in land use for individual parcels in the region. Many of the changes in land use that are associated with increases in population result in hardening of surfaces (i.e. adding buildings, roads, parking lots, etc). This process is often detrimental to the environment, generally

contributing to increased runoff and, therefore, increasing pollution damages to our coastal environments. The logical question that follows is: How can we track the changes over time and place? GIS is the way, and the maps the system produces are the logical tools to clearly illustrate these changes.

Plotting land use/land cover on a map for any region generally begins with pictures of a portion of the earth's surface. These can be single images or a series of images provided by a satellite or photos taken from an aircraft. The images are then classified into different land-cover categories such as urban, agriculture, forest, barren, etc. If the images are taken from the same or similar platform (i.e. the same satellite) over a period of years then the changes can be compared easily. Unfortunately, satellite imagery is only available back to the mid 1970s when coastal population growth and infrastructure development had already begun to spurt. In order to establish the essential earlier starting point for measuring change, a digital (computer) database from historic air photos must be developed.

An optimal solution would be to develop a base-line measure for land use/land cover from historic aerial photography of the 1950s and 1960s. The data in the computer could be transformed into two essential products: A photo mosaic of the entire coast *and* land-use, land-cover delineation for the entire coast. The final product could then be used with other data sets, such as the 1973-1994 Charleston area urban-change detection developed by the South Carolina Department of Natural Resources and the Berkeley-Charleston-Dorchester Council of Governments, to determine changes along selected portions of the South Carolina coast. Some areas of the coast such as Horry, Charleston, and Beaufort Counties have more complete data sets than others, so change-detection studies would likely be accomplished first in those areas.

However, certain problems arise in this type of change-detection analysis when comparing older

aerial photographs and more recent satellite images. They were collected at different scales, the pictures have different geometries, and they were taken at different times of the day and even different times of the year. The GIS computers help us eliminate some of these problems, but not all. GIS and image-processing purists might argue against violating certain requirements of change-detection analysis such as:

- All data should be acquired on anniversary dates
- Or, if not possible, near-anniversary dates must be used
- Images are collected at approximately the same time of day to reduce the effect of changes in sun angle

Ignoring these requirements could result in potential misrepresentation of change in the landscape. I agree with that, especially when one is trying to determine numerous (and perhaps subtle) changes in a number of different land-use classification categories. However, if the intent is to look at changes in urban versus all other land-use categories, I think gross measures of change can be determined even when comparing old data with new.

The first step in compiling a base-line measurement of the coast would entail searching photo archives of the Natural Resources Conservation Service to find the optimal set of air photos to use for this study. There are an estimated 3,300 aerial photos of coastal South Carolina. Assembling this set of photos would consume an enormous amount of time. The project team would have to use a network of individuals in the forestry and GIS communities to cut down on the search time and to avoid duplication of photo sets. The second step would be to complete a sample change-detection analysis between the historic photos and the current imagery to determine whether change detection could be accomplished for the entire coast. Additionally, we could determine if the change detection could only be done at gross levels (urban versus non urban) or if we could compare many different types

of land-use changes.

A project advisory panel could be put into place to examine coastal issues that need to be included in the study. It would consist of scientists from many of the South Carolina state universities as well as state and federal agencies that have a responsibility for coastal matters. The panel's work would ensure that the data set is constructed in a manner that would maximize benefits for all who might use it in the future. The panel would help determine such issues as number of land-use, land-cover categories the data set should contain, spatial resolution of the data set, file formats, and other parameters that would influence the overall utility of this type of data.

The South Carolina Sea Grant Consortium and Strom Thurmond Institute have worked together on several projects dealing with a variety of coastal issues. One of the consortium's research goals is "to establish and enhance economically viable public and private opportunities that are compatible with the long-term conservation of natural and cultural resources of the South Carolina and Southeastern coast." The STI spatial analysis research team believes that in order to establish these economic opportunities in a sustainable manner there needs to be a comprehensive understanding of how land use has changed since population began increasing substantially and since major infrastructure investments have been made in these areas. GIS maps that provide visual evidence of land-use change along the coast will help coastal zone planners, resource managers, developers, and other stakeholders in the economic and environmental vitality of the region make

better decisions about the impact of development in the future. Compiling a set of land-use, land-cover maps (and their associated data sets) gives those people the tool they need to help make management decisions.

A base-line data set such as that described above would give scientists and natural resource managers a comprehensive, historic database from which to make accurate measures of coastal growth. Two distinct products could come from such an analysis. The first would be a rectified (error-free) digital photo mosaic of the coast. Historic, rectified photos do not exist for the coastal area and would be beneficial for the many types of comparative analyses undertaken by scientists and coastal resource managers. The second product would be the digital files of the land-use delineation for the 1950s and 1960s. That data is not available in digital form, but creating it would result in an extremely beneficial tool for the user community. A third product, not nearly as tangible as the first two but just as important, would be the interaction between the members of the project advisory panel and the project team. It is extremely important for this data set to be developed utilizing the expertise of many disciplines because there are many complex issues to be considered. Development in this manner means the data set stands to have a much wider range of utility and longer lifespan.

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# Strom Thurmond Institute Tackles Social Welfare Policy

The Strom Thurmond Institute of Government and Public Affairs is adding social welfare policy to the functions in which it is involved as a public service activity of Clemson University. Until now, the Institute's expertise has been devoted primarily to issues of economic development, intergenerational studies, rural education, tourism, geographic information systems, and the environment.

As the Institute's first associate for Social Welfare Policy, I am pleased to lead this new initiative. Since joining the Institute in August, I have met and been impressed with leaders in South Carolina's government and nonprofit agencies who are committed to assisting poor families that need social welfare services. However, poverty, and the consequences of poverty, continue to be a harsh reality in the lives of many South Carolina citizens.

Poverty can best be understood as a condition in which people are without one or more support systems, resulting in a lack of money to provide for basic needs. Support systems are self-evident: a healthy mind, body, and spirit; nutritious food; adequate health care; good education; safe community and home; employable knowledge and skills; family and friends. These systems are internal or external. Most internal support systems, such as physical health, depend on external support systems, such as good health care, to ensure their continued well-being.

Social welfare policy tends to ignore the importance of support systems. Consequently, I am developing a Support Systems Theory of Poverty that redefines poverty and emphasizes the importance of support systems. The theory calls for the social welfare system, governmental and private, to understand and work with all of an individual's or family's support systems that are weakened or diminished. At the same time, the theory suggests building on strengths of the

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individual or family.

Implicit in this theory is the notion that external systems, such as the education system, may not operate equally well for all people. The theory implies that action should be taken to improve external or environmental systems to support the well-being of all people.

I know the importance of support systems. When I discuss poverty and social welfare policy, I am speaking from 25 years of personal and professional experience. I was a welfare caseworker, a recipient in a number of social welfare programs, and a founder and director of several organizations that improved the health and well-being of Indiana and Illinois citizens.

As a former welfare recipient, I know how terrible I felt when I asked for help, heard doctors say they wouldn't see my son because he was on Medicaid, and waited for hours to show a caseworker a rent receipt. I had many support systems, however, and eventually left welfare. Later, I worked with others to establish a free health care clinic, an affordable housing coalition and a large food bank, and to pass legislation expanding health care services, food programs, and child care services.

From this background, I concluded that the government's definition of poverty is too narrowly based on income. If a family's income is above a specified level, the family is considered self-sufficient. If a family's income is under a specified level, the family is considered in need of assistance

in supplying basic needs. Since the definition of the problem determines the solution, the answer is to give poor people money. This view of poverty is simple and clear-cut for bureaucratic purposes. Its application, however, has detrimental implications for people who are poor. For example, policymakers are generally unwilling to give poor families enough money to bring them out of poverty. In South Carolina, the average monthly welfare grant for a family is \$185/month. When income is so low that it forces families to focus solely on basic survival needs, its members can pay little or no attention to other important needs such as training or economic advancement.

Further, if money is the solution by virtue of poverty's definition, what is excluded from the solution by this definition? Excluded are systems such as family, friends, physical and mental health, academic and vocational knowledge — systems that support well-being and minimize the possibility of poverty.

Obviously, family is the most important support system. The extent to which a family is able to support its members, encouraging them to get the best society has to offer, influences chances for well-being and success. Unfortunately, not all families are able to advocate equally well for their members. The child who gets in trouble with the law will most likely receive better treatment if his/her parent(s) is involved in resolving the problem than the child whose parent(s) is not involved.

Some social welfare programs do try to address a limited range of needs: food stamps, Medicaid, child care subsidies, and so forth. But, these aids are not universally available. These services are "add-ons," available to some people and not to others, available at some times and not at other times, difficult and time consuming to access and utilize, and usually in less than needed amounts. The end result is that many people are trapped in poverty with an income that is inadequate, and without the support systems needed to move out of poverty.

The goal of social welfare policies is for people to earn money and become self-sufficient. Strict work requirements are built into social

welfare legislation. But, what about people who don't have within their support systems the abilities that qualify them for a job, to keep a job, or to earn enough to adequately support their family? While self-sufficiency should be an important goal of welfare programs, self-sufficiency as the primary goal limits potential solutions to poverty and its effects.

For working families with children, child care that is affordable, accessible, and of good quality is an important support system. Some states are doing a reasonable job in offering this support system to families moving from welfare to work. Many states are not doing nearly enough to ensure that care is safe, dependable, and affordable. Consequently, children suffer and parents frequently fail in their jobs because of the problems of inadequate child care. Long-range implications of inadequate child care are very troublesome. Numerous studies show that a substantial number of child care facilities are actually detrimental to a child's well-being. What we have are inadequate external support systems which perpetuate their poverty.

Some years ago I worked with a group of very poor families in which the fathers had emphysema or black-lung disease. The families were shunned by the community because of their poverty. They were wrongly denied food stamps. As a group, they learned about their right to receive food stamps, and eventually the families began receiving them. They wanted to repay the community for the help they were receiving, and they formed an organization that delivered Meals on Wheels to shut-in seniors. When I last saw them, they were raising money to help people less fortunate than themselves, making and selling beautiful quilts.

These folks did not achieve the goal of self-sufficiency because of health problems that were incurable. But, with the support system of food stamps they were able to care for themselves and serve others. Experiences with people like these folks taught me about the importance of external and internal support systems.

All of us, regardless of financial circumstances, need a system of supports to be

healthy, productive citizens and good neighbors. Some social welfare programs are beginning to recognize these needs, but the gap between what impoverished people need and what social welfare programs offer is very wide for many families in South Carolina.

The Institute's focus on issues faced by individuals and families with low incomes in South Carolina is particularly relevant and timely. On the one hand, the socio-economic status of many South Carolinians is improving. Recently, the U.S. Department of Commerce announced that South Carolina was among five states leading the nation in personal income growth (2.2 percent) for the first quarter of 1998. Additionally, the state extended its pattern of job growth, with approximately 1.87 million people working in September 1998 compared to 1.84 million in September 1997. Further, unemployment stood at 3.3 percent in September 1998 compared to 4.1 percent in September 1997.

On the other hand, multiple problems continue to plague South Carolina children and their families. One of the best known reports of social problems in the United States is the annual *Kid's Count*, published by the Anne Casey Foundation. Among the 50 states and the District of Columbia, South Carolina ranks 48th on 10 indicators used to measure children's well-being, according to the 1998 report. For example, 9.3 percent of children born in South Carolina are low-birth weight babies compared to 7.3 percent nationwide; 26 percent of South Carolina children live under the poverty level of \$16,036/year for a family of four compared to 21 percent of children nationwide; and 30 percent of families with children under 18 are headed by a single parent compared to a national average of 26 percent. Educationally, South Carolina is frequently last among states on academic outcomes.

In the midst of these troubling statistics, welfare regulations have gone into effect requiring recipients to work in exchange for time-limited benefits. Early reports of these welfare reform measures in South Carolina indicate that some families are benefiting from the changes. For

example, in a recent Department of Social Services' survey, 70 percent of former recipients who responded had jobs. Their average income was \$6.44/hour, however, placing them under the federal poverty level. Additionally, only 30 percent owned a car; the remainder paid \$14/week for transportation. Child care was an even larger expense, averaging \$30/week.

Although a variety of social welfare programs and a robust economy are helping some people raise their standard of living, we at the Institute are concerned that many South Carolinians continue to live in poverty and experience the negative effects of poverty. It takes an extraordinarily capable parent to raise a well-schooled and "society-ready" child when the parent works long hours at a poverty-level wage, relies on child care that is costly and undependable, does not have health insurance, and does not have reliable transportation. Unfortunately, these effects of poverty describe the circumstances of many South Carolina families.

Through the Strom Thurmond Institute's new social welfare initiative, we will research and analyze policies and programs, supporting those that promote healthy families and children and offering objective information on those that hinder families' escape from poverty. Additionally, we will offer programs and materials to citizens and policymakers.

One of our initiatives will be a public forum for discussion of poverty and the effects of poverty in South Carolina. We will bring together groups representing unique perspectives: welfare recipients, providers of social welfare services, business people, academics, and clergy. Our intent is to facilitate a round-table discussion of these issues in a way that people will learn from each other, reach some common ground, and inform policymakers and the larger public about their conclusions on issues related to poverty.

Another priority is participating with a team of researchers studying recent changes in welfare policy in 13 southern states, the effects of these changes on individuals, families, and communities, and the determinants of successful transitions to employment. This study is sponsored by the

Southern Association of Agricultural Experiment Station Directors (SAAESD).

We at the Institute hope that our work will enrich public discussion of the role of governmental and private sectors in support of the social well-being of South Carolina citizens, particularly those with low incomes.

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