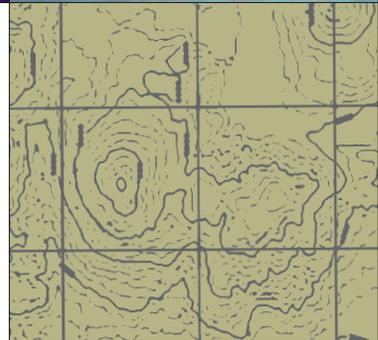


Cache Valley SDAT

A Report on the Sustainable
Design Assesment Team



Cache Valley, Utah June 28–30, 2005

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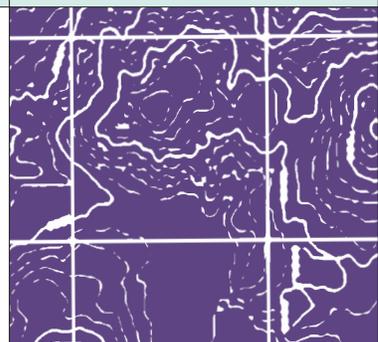
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Ray Mohr, *Air Quality*

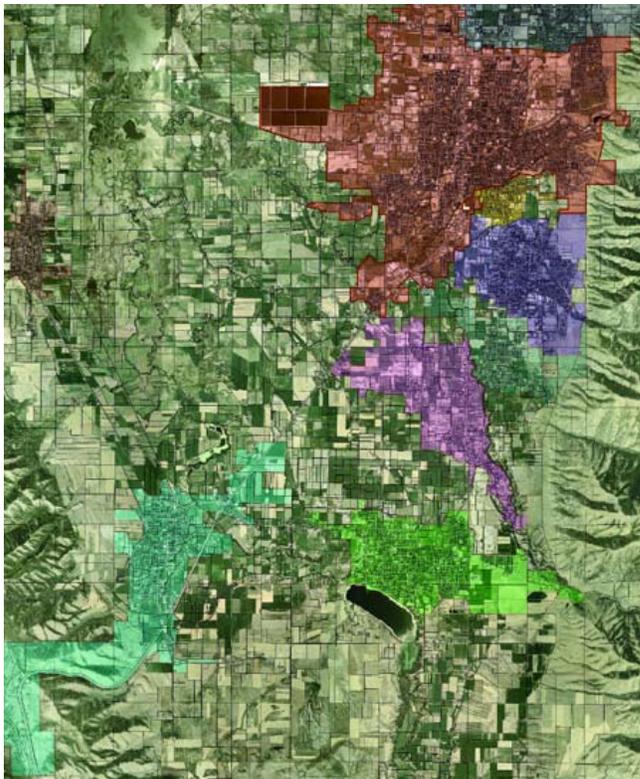
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Executive Summary

In March 2005, local governments, business owners, stakeholders, and concerned citizens from throughout Cache Valley requested the assistance of the American Institute of Architects (AIA) Sustainable Design Assessment Team (SDAT) program. The application for assistance highlighted many of the challenges facing the valley: improving air quality, developing transportation strategies, strengthening the local economy, sustaining the agriculture industry, preserving quality of life and sense of place, guiding growth pressures, improving water quality and quantity, and restoring wetlands and wildlife habitat.



In June 2005, after extensive communication and a preliminary visit in May, the AIA sponsored a team of national experts to visit Cache Valley to assess its current state in terms of sustainability, including its assets, weaknesses, opportunities, and challenges, and to provide a set of recommendations to improve the sustainability of the valley.

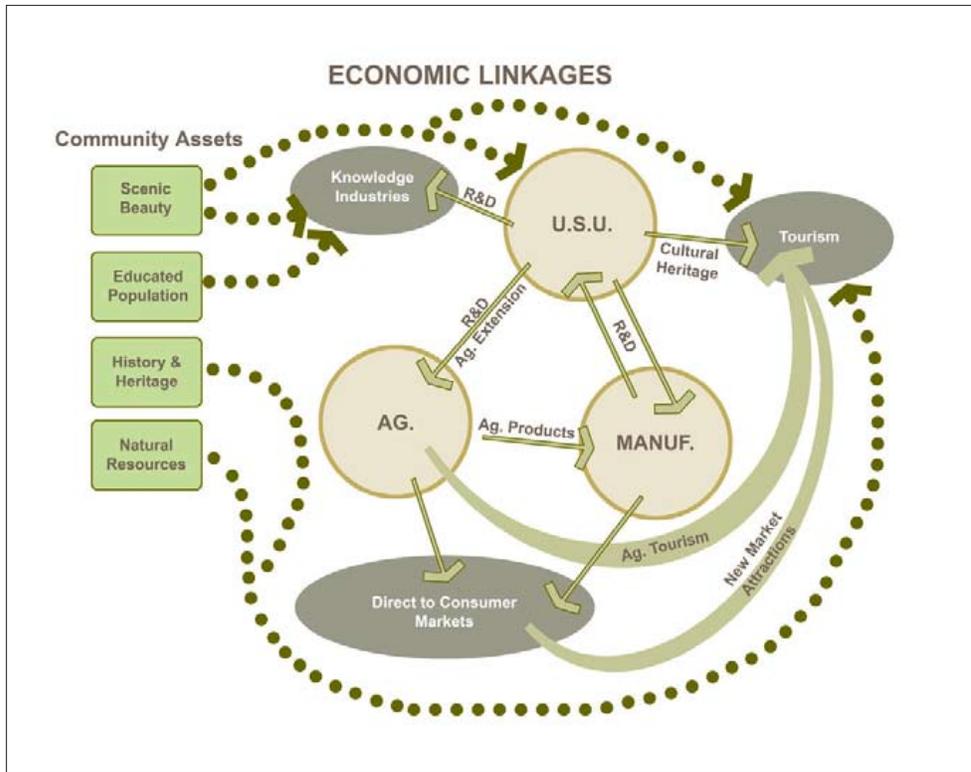
What We Discovered

The team discovered two important facts. First, Cache Valley is really “a valley of communities connected by a system of economic and environmental factors.” The most important of these factors are economic development and air quality—one cannot exist without the other. Second, Cache Valley shares the same challenge most communities struggle with today: how to grow the economy and protect what is loved. This challenge raises several questions: Are they addressing the challenge the right way? If not, how can it be done correctly? Where can growth occur with the least negative impact and greatest value to the community? How do the valley and the communities get better, not just bigger?

The AIA SDAT was developed to help communities with these challenges. The SDAT studies the challenges the community has defined, understands how they came to be, and delineates options for the future that assure an economic future with environmental quality. The objectives and mission of the Cache Valley SDAT were to promote a sustainable development approach to the valley by connecting the natural landscape with economic and community-based issues.

The objectives of this SDAT are powerful and achievable. They require:

- A regional plan developed by a selected group of community organizations and interests representing the economy, the communities of the valley, and the environment—both natural and human made
- A reworking of the tax structure to create a level playing field and a spirit of cooperation between communities
- Principles and guidelines that assure changes are mindful of the economy, the community, and the environment and serve as a baseline to show that each change improves the air quality.



The illustration above shows the important relationship between the environment and the economic health of Cache Valley. In the simplicity of this model is a message the SDAT charrette participants voiced strongly and clearly, “We want a developing economy, affordable housing, great communities, a strong agricultural business, great air and water quality, and a preserved environment.”

The Valley As a Group of Communities

Regions are complex large-scale environmental, social, and economic systems. Cache Valley illustrates one of the most beautiful systems. It is beautiful but on the verge of having that beauty degraded to the point of limiting its future and restricting its prosperity. The elements that make up a community—the land and structures, people and their sociocultural activities, and the business and educational institutions—are all vital and interconnected with this natural beauty. As a result, improvements to one simultaneously enhance the others and degradation to one degrades the others. What good is

it to solve an economic problem if it increases air pollution and environmental problems? What good is a solution to an environmental crisis if it wrecks economic havoc on its citizens? In either case the community, as a whole, suffers.



The Cache Valley SDAT illuminated the community’s stewardship of the regional ecological value and the entire regional watershed of which many towns and communities are a part. The valley’s ecology and climate are important elements in the assessment of available capital, ecological capital, and Cache Valley is clearly an example where environmental protection and economic development must work together.

“Sustainability is the doctrine that economic growth and development must take place, and be maintained over time, within the limits set by ecology in the broadest sense—by the interrelations of human beings and their works, and the biosphere...It follows that environmental protection and economic development are complementary rather than antagonistic processes.”

—William D. Ruckelshaus, Scientific American, September 1989

The sustainability of the valley is dependent on the stewardship of the whole valley. Future efforts that connect neighborhoods with the region-wide watershed will provide economic value and environmental protection. Ecological capital, which is a measure of how many resources are renewable, is very high in the valley and development plans that integrate and connect to this natural capital provide tremendous opportunity with the least economic cost. The desire of many people to live within a “park like setting” is a highly valuable factor, this is natural capital that adds greatly to the valley’s competitive advantage to draw new business and residents. Degrade that natural capital and the advantage ends; lose that capital and even the existing businesses may leave.

Future development in Cache Valley guided by the series of principles and recommendations developed in the Cache Valley SDAT will create the best case win-win scenario for economic and environmental gain. These principles and recommendations spring from the valley and region’s environmental, economic, cultural, and civic past, and should be integrated into the valley’s public policy, planning, and design decisions. On behalf of the Cache Valley SDAT and the American Institute of Architects, it is hoped this report will be a useful guide to Cache Valley citizens as they chart their future for the coming years.

Principles and Guidelines

- Build on your strengths
- Understand how the whole valley works, including its economics, community, and environment; this is a valley of communities connected by a system of economic and environmental factors
- Grow the economy while improving the environment
- Grow the economy while protecting the valley heritage
- Guide where growth can occur; do not leave it to chance
- Weigh every decision based on whether “it is a value to the whole community”
- Each decision should make the valley and the communities better, not just bigger

Actions Summary

Action: Create a regional planning council to develop a citizen-based vision that locates critical lands, view corridors, and future development opportunities for the entire valley while preserving the “sense of place”

Deliverable: Create a valley vision map that illustrates important relationships between agriculture, the economy, the communities, and the environment. This vision will act as the “road map” to efficient future growth patterns while creating thriving, walkable communities and reducing car trips, therefore improving air quality.

- Locate and define the best places for economic benefit, efficient growth, and environmental protection
- Establish development and non-development zones
- Protect the benches
- Protect the “agri-cultural” and natural systems and view corridors

Action: Create a shared economic vision of the collective communities, level the playing field, and create a cooperative atmosphere between towns and communities—individual communities but one valley

Deliverable: A shared tax base that will establish fair and equitable competition and cooperation between communities, creating a mutual benefit to each community and the valley

Action: Provide incentives to build and develop within existing towns and cities; this will add life and economic vitality to existing town centers and neighborhoods

Deliverable: Efficient land use patterns and zoning on all scales; focus on creating active town settings that minimize car trips and increase “people places” and a higher quality of life

The regional planning council will create a regional master plan for Cache Valley. The council will be comprised of individuals from each community representing business, their community, and the environment. The council will advise all of the communities on plans for roads, housing, agricultural preservation, and transportation and community growth patterns and will create better coordination and a more connected community vision and efficient use of tax dollars.

The measurement as to how well you are doing is in the improvement of air quality while the economy grows and the quality of life improves.

CACHE VALLEY SDAT ISSUE REPORTS

AIR QUALITY

In Cache County, Utah, the majority of the county's population resides in the Cache Valley. This beautiful, broad valley in northern Utah is bounded on all sides by mountains. Air quality in the Cache Valley is generally good. However, there is a winter period when pollution levels rise and approach the Federal National Ambient Air Quality Standard for Particulate Matter smaller than 2.5 micrometers in aerodynamic diameter (PM_{2.5}). Rather than being a product of heavy industry emissions, the Cache Valley's wintertime PM_{2.5} is a complex by-product of many sources, including home heating, industry, agriculture, and vehicles. This complicated mix is unique to Cache Valley and has provided scientists with an intricate puzzle to piece together.



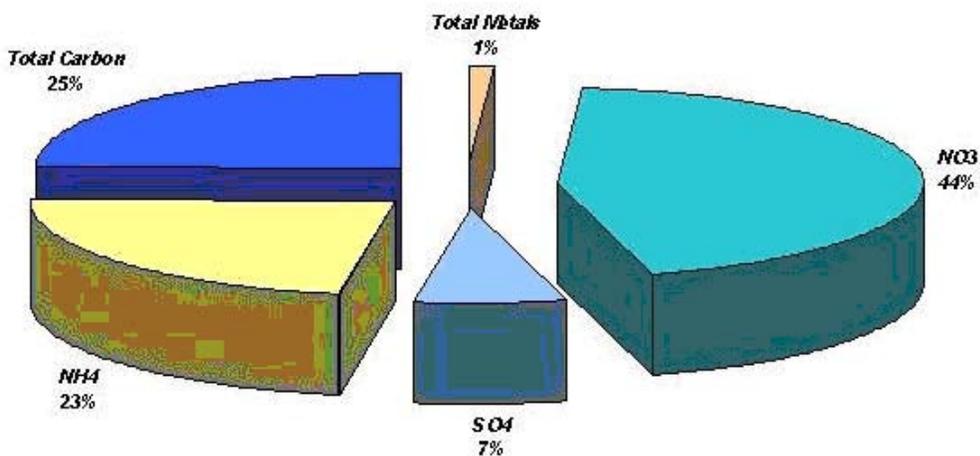
Randy Martin, an associate professor of environmental engineering at Utah State University, and Grant Koford, an environmental health scientist at Bear River Health Department, published a summary of PM_{2.5} monitoring levels in the county. Based on the levels monitored during the 2003–2004 period, the three year PM_{2.5}

averages for 24-hour and annual levels were 64 mg/m³ (NAAQS standard 65 mg/m³ and 12.8 mg/m³ (NAAQS standard 15 mg/m³). Thus, the area hovered around officially exceeding the 24-hour federal standard. The authors conducted a study to determine the homogeneity of the pollution levels. It was found the pollution spread evenly across the valley.

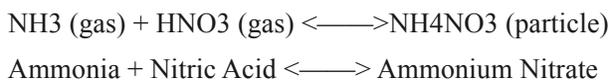
Most of the valley is classified as rural with agricultural operations making up a significant part of the local economy. Logan is the largest community in the valley and also the home of Utah State University. The total population is approximately 100,000.

The PM_{2.5} particulate matter of most concern is ammonium nitrate. This is a secondary pollutant (not directly emitted from a source but formed in the atmosphere). Analysis of the samples indicates as much as 70 percent of the sample is ammonium nitrate.

Speciated PM_{2.5} Filter Mass Breakdown by Percent for a Typical Wintertime Day in the Cache Valley



Once it is released into the atmosphere, ammonia undergoes chemical reactions with other pollutants and natural components of the atmosphere. This leads to the formation of compounds containing organic nitrogen, nitrogen oxides, and ultimately to nitric acid or organic-nitrate aerosols. This resultant nitric acid reacts rapidly with ammonia gas to form the ammonium nitrate particles.



Most important, fine particulate matter affect the public's health. The U.S. Environmental Protection Agency (EPA) establishes health-based standards to protect the most sensitive groups in a population (e.g., children and the elderly). Because of its very small size, fine particulate matter can be inhaled deeply into the lung and affect the respiratory system. Health investigators have been also looking at links to cancer.

Principles for Community Action

Understanding the nature and causes of the air pollution problem in Cache Valley is a complex challenge. It is important that the analysis of this issue proceed in a manner that encourages systematic inquiry and provides for the consideration of disparate views on the nature and causes of the problem. There are several principles that need to be considered as the community seeks to understand and solve this problem.

- Planning should be based upon the best science applied in a systematic fashion. The technical basis of air quality planning is complex and involves many parameters of weather, monitoring equipment and results, collection of emission information from all sources, and the application of air quality models. It is critical that the participants in the process understand the theory and application of the information and data used to base community action.
- Resources and expertise should be shared and the process must be as inclusive as possible. It is especially true in the area of air pollution where no one agency or government entity can solve the problem. The existing partnership in this process has been very effective to date. The Utah Department of Environmental Quality, the Bear River Health Department, and Utah State University have conducted monitoring studies, initiated testing of automobiles, and initiated a public awareness and outreach program. If the area is designated as a “nonattainment area,” the planning process will need to be expanded.
- Any pollution control strategy recommended for implementation should be proven in terms of air quality benefit and cost effectiveness for the community.
- The fundamental idea of equity in the development of control strategies should be a primary consideration. In many regulatory programs, the key premise is that the polluters will be mainly responsible for the costs of clean up. To the extent practicable, that premise will be followed in this process.

Air Quality Planning—Recommendations for Near and Long-Term Priorities

Air quality planning seems to be at the crossroads in this process. Although Cache Valley has not been officially designated as nonattainment, the likelihood of that event occurring seems highly likely. The community needs to clearly understand what that means and what it doesn't. For example, this designation does not automatically mean that an inspection and maintenance program will be a mandate. The local process has accomplished a great deal and the EPA has indicated that it will most likely work closely with a community as it goes through this process. The key priorities should focus on building what has been accomplished to date and using the technical tools to ensure continued air quality past the time frame called for in the EPA requirements.

Near-Term Priorities

- Continue to support and expand the local technical and planning process.
- Work with the partners in the process to understand the EPA requirements for the necessary plan requirements and technical justifications for the air quality plan.
- Continue to pursue long-term funding and support for monitoring and analysis efforts. One area of interest would be to make the air quality model available for use in local evaluation of possible control strategies.
- It will soon be necessary to formalize the planning process and to seek the participation of key stakeholders in the community. Such interests as the agriculture, transportation, and business communities should be invited to be partners in this effort.

Long-Term Priorities

- Develop the local capacity to evaluate the impacts of long-term development on the maintenance of clean air in the valley. Given the unusually persistent temperature inversions and related meteorology of the area, the community may want to incorporate the idea of valley “carrying capacity” as a way to define this idea.

Integrate air quality planning into other planning areas such as transportation, land use, and agriculture in a comprehensive way.

AGRICULTURE IN CACHE VALLEY

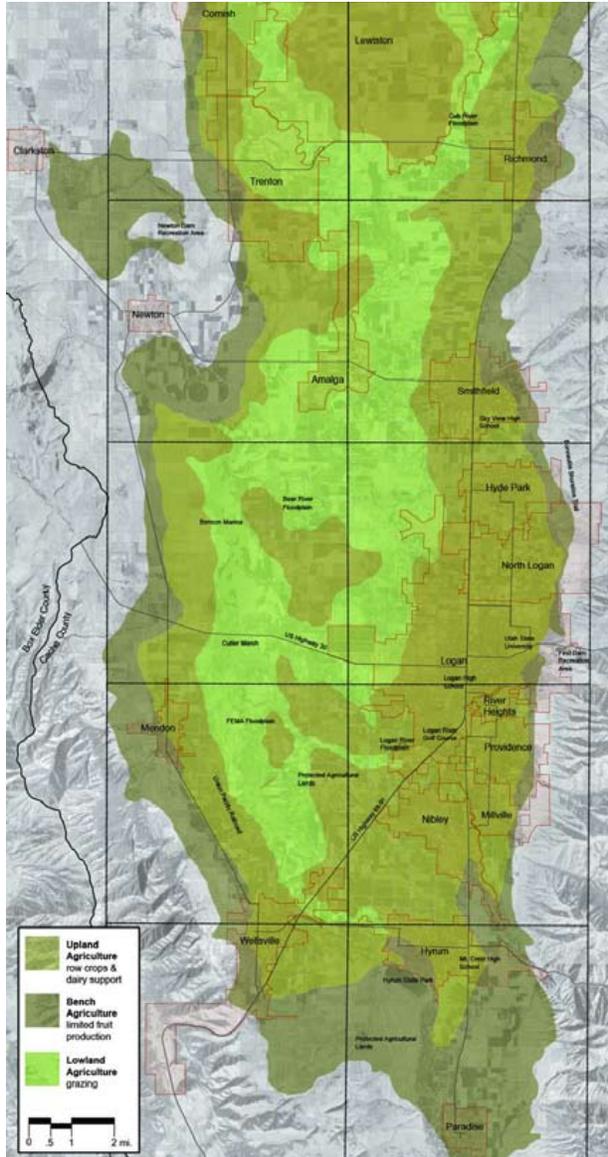
The traditional expectations of agriculture were food production, gainful employment for farm families, and a healthy, rural environment for raising a family. In the future, agriculture will also be tasked with a broader range of societal services. Included in this new suite of expectations will be environmental protection and management, rural community integrity, and provision of the sensory pleasures of open space. Opportunities for recreation and health and the conservation/enrichment of biotic diversity are additional expectations novel to North American farmers but already in place in the United Kingdom and elsewhere. A broader understanding of the potential societal services performed by agriculture—and which may be lost by the decline of agriculture—may reveal ways to harmonize agriculture with other land uses in Cache Valley.

Agriculture is functionally a form of landscape management which may include anything from perennial woodlots, forage, and fruit crops to livestock, wild land corridors, watercourses, and wetlands. Other elements include cities, residential and industrial development, roadways, and other features. The challenge is to arrange these disparate land uses in ways that are ecologically as well as economically sound for farmers as well as for the wider valley communities.

Ecological Zones from Historical Land Use Trends

While the current landscape suggests livestock-based agriculture, and dairy in particular, Cache Valley has supported such disparate enterprises as fruit orchards, sugar beets, potatoes, and vegetables for processing by a local Del Monte cannery. Most of these enterprises became unprofitable when processing capacity left the valley. Indeed, the absence of processing capacity—whether a canning plant for vegetables or a slaughterhouse for pigs or a refinery for sugar beets or a scale-appropriate processor for organic milk—appears to be the key bottleneck to production of most crop and livestock types within the valley today.

Historical land use trends in space as well as time help to distinguish biological from economic limits to crop and livestock production in the valley. Biological limits are largely immutable, while economic limits may be more malleable. Three ecological or adaptational zones are revealed by historic cropping practices:



- Bench agriculture, located in a 0.1-to 0.5-mile-wide zone encircling the valley at the base of the steeply sloping valley walls, supported limited fruit production, including apples and cherries, until about 1970. The orchards were both rain-fed and irrigated. The market was largely local consumers, including home canners. Dryland grain and grasses are also grown on bench land. More recently, this is a zone favored for housing, with demand constrained only by the lack of water. Bench land is also an important groundwater recharge zone.
- Upland agriculture, supporting irrigated row crops and dairy, occupies roughly two-thirds of the agricultural land of the valley down slope from the bench land on both sides and at the southern end of the valley. Irrigation water is derived from the Little Bear River flowing northwesterly up the west side of the valley from Hyrum Reservoir, and from Blacksmith Fork which originates on the east side of the valley. Irrigation water derives largely from channeled snowmelt, and is reasonably secure at present. Irrigation is gravity-fed, with an average 100 psi, and of very low cost, with little change in cost over many years. Due to its alluvial origin, soils in this zone are generally deep and fertile, with little need for fertilizer apart from N, and some P to alfalfa.

Upland agriculture is most concentrated in the southeastern third of the valley, and less intensively on the east and west sides along the full length of the valley in zones ranging from 0.25 to 2 miles wide. Row crops would include sugar beets and canning vegetables, sweet corn, and grains for livestock.

- Lowland agriculture occupies the remaining third of the agricultural land, centered on the valley floor. Lowland agriculture, consisting largely of grazing beef and dairy cattle, occupies much of the northern half of the valley west of Logan, as well as a mile-wide strip in the southwestern corner of the valley. Although irregularly tilled, a high water table, coupled with cold air drainage from the surrounding slopes, limits lowland agriculture to perennial forages for grazing. Reliance on grazing has declined over the last 30 years, with some policy initiatives intended to remove fencing altogether.

Agricultural Strengths of Cache Valley

The diversity of ecological zones and growing conditions is one of the strengths of the Cache Valley “foodshed,” in that it supports a range of crop and livestock enterprise possibilities. Other strengths include excellent soil and water resources and limited reliance on GM or biocide-dependent crops (e.g., corn, soy, cotton, or canola), thereby supporting a “clean and green” image.

Infrastructural strengths include:

- An established population of experienced agricultural entrepreneurs, such as Gossner’s cheese and Theurer’s meats
- A modest population of producers/processors interested in diversifying to produce organic milk (three herds totaling 250 cows), organic dryland wheat and organic flour (two mills), grass-fed beef (perhaps a dozen herds totaling 500 slaughter animals a year within five years), a home-delivery dairy (Rosehill), two organic CSAs, and several sheep and/or goat operations (including Lan Farm in Soda Springs, Idaho, and Gorings)
- Gardener’s Market
- A two-year-old incubator kitchen which is USDA-approved and currently underused
- A certified (organic) meat processor and two other mobile meat processors

- A culture/heritage supportive of farming, especially family farming
- A new Malt-o-Meal plant at Garland, Utah, which may increase demand for valley cereals in the future
- Eight flour mills in the valley, processing hard red or soft white wheat for flour.

In addition, state funding appears to be available for enterprise development, and the local Chamber of Commerce is keen to collaborate. Further strengths are a stunningly attractive physical setting coupled with proximity to metropolitan consumers from Salt Lake City (front of Wasatch Range), southeastern Idaho, and western Wyoming.

The Utah State University Caine Dairy, located along 89/91, provides a key agricultural anchor for agriculture within the Southern Corridor. Resident expertise from the Utah State University in Logan—Jennifer MacAdam (grass-fed beef), Al Olsen and Randy Wiedmeier (grazing management), Dan Drost (horticulture and organics), Devon Bailey (marketing specialist), Paul Rassmussen (Dean, College of Agriculture), and Clark Israelsen (agriculture extension agent, clarki@ext.usu.edu)—is also willing and able to help.

Design/Intent of Agriculture

The focus of agriculture, whether for subsistence or export of bulk, raw, homogeneous commodities, or for production of value-added items for niche markets, determines what is a strength or a weakness. The intent is to design an ag-food system which is tailored to capitalize on the strengths of the valley, to benefit farmers as well as the broader community and environment. Cognizance of emerging changes to the factors driving agricultural evolution, as in the rising price of fuel and in societal willingness to pay for services such as carbon sequestration, are other design features.

At present, Cache Valley agriculture focuses on milk production from dairy cows, roughly 90 percent of which is processed and exported outside the valley as cheese and other products. Although cow numbers are stable, Cache Valley has lost its number 1 ranking for dairy products in the state primarily due to huge dairies relocating to southern and central Utah from California.

Although 90 percent of milk produced in the valley is Grade A, the ratio of fluid to industrial milk is roughly 50:50, as determined by what the processors want to do with it. Three processors account for all of valley milk, namely Gossner's (70 percent), Dairy Farmers of America (25 percent), and Magic Valley Quality Milk of Jerome, Idaho (5 percent). Demands for valley cheese in general, and high-quality unique products

in particular, were established long ago and have remained strong. More recent demand is for ultra-high temperature milk for the military. Processors are largely local and privately owned, and contract essentially all of the production of valley dairies.

Much of the field crop agriculture, including limited corn for corn silage, produces home-grown feed for the livestock industry. The central importance of irrigation is reflected in irrigated wheat yields of 12 t/ha, compared to 3 t/ha for dryland wheat. Nitrogen fertilizer is applied at a rate of 50 to 100 lb actual N/ac to dryland wheat, and 200–250 lb/ac to irrigated wheat.

The beef sector is largely cow/calf, with calves sold for finishing outside the valley. The only hog processing facility went out of business a few years ago, and the one remaining slaughterhouse processes roughly 60,000 beef carcasses largely from outside the valley.

Cache Valley grows little of its own food, and is almost wholly dependent on food imported from outside. A short growing season and winter temperatures are perceived as fundamental limits to food self-sufficiency.

Thus, Cache Valley agriculture is currently dominated by dairy, supported by beef cow/calf, and is export-oriented, dependent on markets outside the valley, with value-added largely retained within the valley by local processors. Food consumed is largely imported, with little focus on food self-sufficiency within the valley.

Recommendations

Land Use. As is true in many areas, agricultural land is under threat from development, whether for residential or business purposes. Safeguarding agricultural land from development has been a key initiative. It is recommended that Cache Valley:

- Explore a variety of devices, including the use of transfer and/or purchase of development rights, rights-of-way and easements for preservation, and proactive planning to protect farm land. A local purchase of development rights program should give priority to applications from the South Corridor.
- Impose a moratorium on development in the South Corridor until the SDAT report is submitted and responded to by the public and private sectors.
- Prioritize for protection and preservation the following three areas: a) Mt. Sterling, south of 101 and east of 89/91; b) west of 89/91 from the American West Heritage facility north to College Ward (2200 South); c) east of 89/91 from USU Caine Dairy north to Nibley (3200 South).

- If development is permitted on the South Corridor, maximize setbacks, minimize access points, and adopt design standards to maintain a rural ambience. Apply valley-wide standards and solutions, and encourage the political will/cohesion to make it happen (e.g., Cache Mayors Association and County Council).
- Identify field drains to avoid problems with development blocking drains, compounding drainage problems.
- Acknowledge the very fundamental issue of safety and accessibility, and the literal impossibility of safely moving farm equipment and machinery on and across 89/91 (e.g., overpass between 3200 and 3900 South).
- Implement a shared county sales tax to minimize intermunicipal competition for development.

Environment. Cache Valley agriculture is limited by three fundamental constraints: water, a short growing season, and unpredictable frost. The prominence of livestock-based agriculture, supported by small grains, grass, and alfalfa, is a logical response to these constraints. Thus, it is recommended that Cache Valley keep in mind the following:

- Livestock-based agriculture can pose environmental risks. In Cache Valley, N may be delivered to surface water when N fertilizer or manure N is applied to crops growing above an unconfined water table underlain by an impervious clay layer, which is itself underlain by an aquifer applying substantial upward water pressure.
- In addition, ammonia, perhaps from manure, may be combining with NO_x gases to form the particulate air pollution of great concern in the valley, particularly during winter months. Practices such as strategically modifying the protein fraction in dairy rations to improve N utilization efficiency, and emphasizing rumen bypass instead of rumen degradable protein, will reduce N excretion. Bedding practices, and composting to immobilize labile N, may also help to convert N to slow-release forms of direct benefit to producers as well as society.
- It is also essential to recognize the positive environmental impacts and services performed by agriculture, including protection of biodiversity and wildlife habitat, cleansing and purifying water, and providing open space and ambience. Perennial hay and pasture, for example, withhold land from cultivation and sequester atmospheric carbon while promoting water infiltration, immobilizing labile nutrients, and enhancing soil tilth.
- Displacement of agriculture by development compromises not simply food production and farm communities, but also the environment.

Diversification/Marketing for Economic Viability of Agriculture. Livestock-based agriculture of the form practiced in Cache Valley is arguably more ecologically sustainable than most types of agriculture. Improvements can be made but compared to most types of agriculture practiced in the West, practices common in the valley may pose comparatively little risk to the environment.

Nonetheless, the form of livestock agriculture, whether organic or grass-based or encompassing a broader range of livestock types, may improve the economic and ecological performance of the agriculture enterprise portfolio. Further diversification into niche enterprises may also benefit local producers and processors.

Continuing to focus on commodity production, or on just one or two enterprises, appears unlikely to achieve the goal of sustained economic vitality for Cache Valley farmers and processors. It is therefore proposed that Cache Valley consider a suite of agricultural enterprises, including but not limited to what are currently viewed as niche markets to provide the breadth and resilience needed for sustainability.

Countervailing forces to diversification are several. A key constraint for most producers is lack of inclination or skill in processing and marketing. The supply of producers willing to undertake novel enterprises or methods may also be small. An additional constraint is the limited market represented by the 100,000 inhabitants of Cache Valley, such that demand for novel products may be saturated by a quite limited acreage (e.g., 200–400 acres).

To address these constraints while capitalizing on the strengths of Cache Valley agriculture, it is recommended that Cache Valley:

- Capture, establish, or grow new market demand for valley products via increased exposure or accessibility through a central, high profile market (e.g., Gateway to Cache Valley), located at or near the American West Heritage Center or the USU Caine Dairy. Local and especially out-of-valley consumers may be attracted to such a center, making Cache Valley a “destination,” analogous to the role of Pike Place farmers market in Seattle or Fisherman’s Wharf in San Francisco.
- Ensure a value-chain approach that rewards primary producers and processors, e.g., as a coop or as individual producer/processor shareholders in the central market so that value-added benefit makes its way back to the producer and processor.

- Focus on local, branded products, such as Cache Valley logo cheese, raspberry jam, grass-fed beef, and organic products. Existing local businesses, including Week's Raspberries, already travel two hours to Park City to set up roadside stands to market fresh fruit. The opportunity to profile their produce with less effort may be quite attractive.
- Consolidate effort through an umbrella organization, such as the Sustainable Agriculture Association of Bear River Area (SAABRA), to facilitate the process and reduce the complications for producers/processors to get their products into the marketplace.
- Bundle services and products to capture more sales from individual consumers, e.g., not simply food products but also crafts, artwork, tack/saddlery, recreational bike trails, horse treks, hunt/fish expeditions, and bed/breakfast establishments.
- Vest existing like-minded organizations with ownership of the process, including:

BRAG (Cindy Hall, cindyh@brag.dst.ut.us)

Chamber of Commerce (Sandi Emile; semile@cachechamber.com)

SAABRA (Penny Trinca, ptrinca@saabra.org)

Jed Christianson (Utah Department of Food and Agriculture, jedchristenson@utah.gov)

Clark Israelsen (agriculture extension agent, clarki@ext.usu.edu)

Farm Bureau (Val Jay Rigby, rigbyranch@attbi.com)

Cache Land Preservation Alliance (John Meikle, chair, jcmeikle@comcast.net)

Utah Association of Conservation Districts (Thayne Mickelson, thayne.mickelson@ut.nacdnet.net)

Cache Cattleman's Association (Joe Fuhriman, chair, cfuhriman@spillman.com) Smithfield Livestock Auction (Lane Parker, lane@smithfieldlivestock.com)

Tourism (Julie Hollist, Julie@tourcachevalley.com)

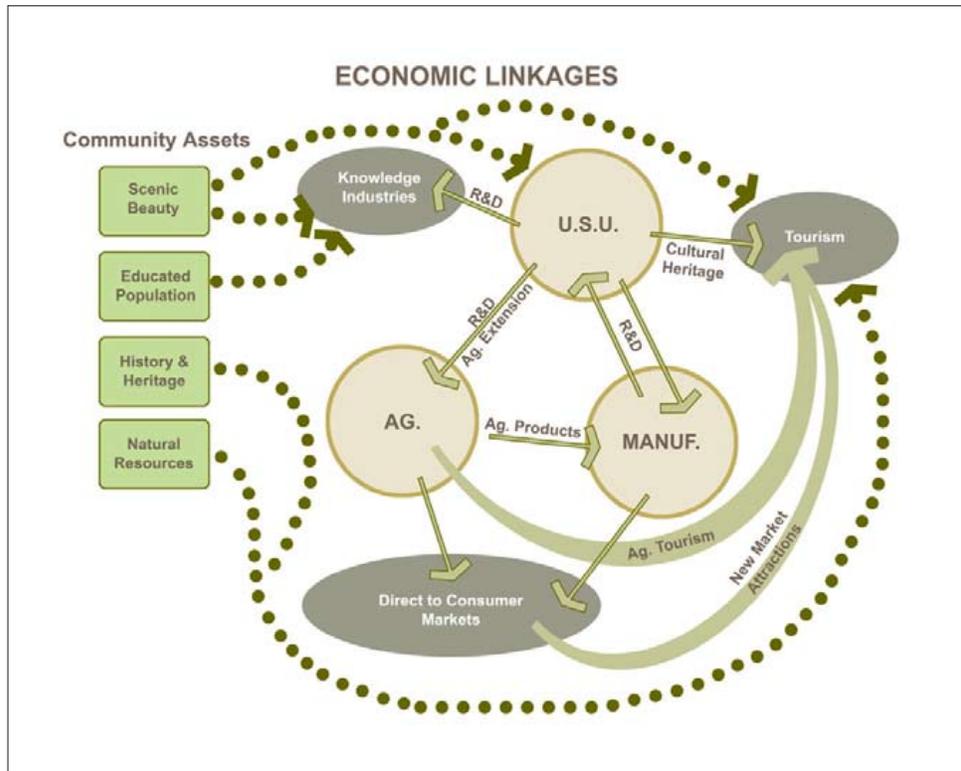
Audubon Society (Val Grant, val@bioresourcesinc.com)

Cache Trails Coalition (Dave Rayfield, rayfield22@comcast.net)

American West Heritage Center (Matt Dahl, mdahl@awhc.org)

Bear River Heritage Area (Elaine Thatcher, elainet@hass.usu.edu).

VALLEY ECONOMICS



Cache Valley is a living and working community with a diverse economic base and enviable balance between workforce and jobs. As growth and development occur, the valley will seek to accommodate them in a way consistent with the essential character of the valley—respectful of natural resources and constraints and mindful of the need to create a variety of job opportunities—and provide goods and services for a naturally increasing population. The economic future of the community builds on the existing base industries—Utah State University (USU), agriculture, and manufacturing—while looking for new niches that can capitalize upon linkages to the base industries and valley assets. Underlying the vision is a new regional model for growth management and systems thinking, which recognizes that both the benefits and costs of growth must be broadly shared throughout the region, and that no one community should reap an undue benefit or shoulder undue costs associated with change in the region.

Recommendations

- Maintain a balance of workforce and jobs. The valley’s growth is driven as much or more by natural increase than in-migration. A healthy economy has limited the need for out-commuting, keeping the community locally centered and self-sustaining. While the attractiveness of the valley will inevitably draw people who work elsewhere, and people in specialized occupations will find better opportunities in the larger region, the valley should look to avoid becoming a bedroom community. This means planning ahead for creating employment opportunities for a growing population.
- Maintain and enhance the central place value of Logan. Logan, and the downtown in particular, is the historic heart of the region. Its health and vitality reflect upon the image of the entire valley. Opportunities exist for improving and growing the downtown, while at the same time retail sprawl and cannibalization threatens to undermine the downtown’s market base. On the regional level, concentrating all development in and around downtown Logan—including retail, commercial, and residential—will help increase the mass (hence draw) of the downtown. Routes 89/91 should remain both Logan’s main street and the major transportation corridor linking the downtown with the mall development to the north.
- Preserve the transportation links vital to industry. Manufacturing, especially the food processors linked directly to the agricultural sector, remains an important part of the economic base and local employment. Many of these industries depend upon their transportation link to the Salt Lake City metro area. Land use planning and access management tools should be used to preserve the quality of the existing transportation link. Permitting development to overly congest the corridor places the manufacturing economy in jeopardy, or at least frustrates future growth. As the manufacturing businesses are basic industries while, for example, retail is not, this could have an impact on the local economy beyond the direct, short-term employment shifts.
- Preserve and enhance the base industries—the university, agriculture, and manufacturing. These three represent the traded sector of the economy, i.e., the sectors that “sell” to markets outside the region. Their health drives the remainder of the economy. While the university is a reliable economic engine generally immune to business cycles (but not to shifting public funding priorities), the other two are linked to the overall health of local farmers. Outside of Icon, the largest employer, local manufacturing is driven by cheese-making and other food processing,

which is primarily located here due to the combination of proximity to primary suppliers (i.e., farms) and reasonably good access to markets. In Cache Valley, an economic base-focused strategy is largely an agriculture-focused strategy.

- Build and strengthen regional economic linkages. The local economy already exhibits significant linkages between its base industries. As noted above, the largest manufacturing industry is food processing which gets its primary impacts from local farms. The university is linked to both industries through its agriculture programs, agricultural extension, and food-science research and development (R&D). The key is to enhance the existing base and create new base niches by exploiting additional linkage potential. For example, agriculture that provides biodiesel products to power manufacturers' trucks would strengthen the farm-manufacturing link. The R&D focus of USU, as a major research industry, could be leveraged to spin off new technology and knowledge-based local startups, which in turn could capitalize upon the educated local workforce and the region's natural amenities (which help attract talent). Eco-and agri-tourism would tie in with the agricultural base and also benefit from the amenities provided by Logan as a university town. Tourism could also tie in with direct-to-consumer niches for specialty food products, which could also create new opportunities in food processing.
- Encourage growth that adds value to the regional and local communities. Whether or not growth is inevitable, the growth that does occur should be shaped for public benefit. For example, growth that occurs in downtown Logan and helps enhance the market viability of the downtown provides direct benefits while incurring lower infrastructure and environmental costs than growth on the periphery. Residential growth, which is an organic extension of the historic centers, can help reinforce these centers and is respectful of the heritage of the region.
- Remove perverse incentives from the tax structure. Like many other places where land use authority resides with small and self-interested municipalities, land use planning is driven by a chase for tax incentives rather than sound regional planning. This applies to the sales tax, as well as special taxing districts. For example, residential development within a redevelopment agency district is a fiscal win for the host municipality but a loss for the county and the school district. Point-of-sale distribution of sales tax revenues (which applies to one-half of sales tax receipts) allows municipalities with large retail bases to enrich their coffers through taxes on the spending of the entire region. In addition, even more than the property tax, it places emphasis on the development of retail rather than other commercial or industrial uses.

Like most competitions, the chase for tax incentives produces some winners and even more losers, but the overall loser is the region as a whole. Fundamental to the solution is the principle of fairness. Growth and development bring both costs and benefits. No single locality should be expected to bear an undue share of the costs, nor should any reap an undue share of the benefits.

WATER RESOURCES



Cache Valley is fortunate to be blessed with an abundant supply of high quality water resources. These water resources, which include rivers, streams, wetlands, floodplains, canal systems, and ground water, are valued by its residents for the multiple and varied benefits they provide, ranging from drinking water, irrigation, recreation, aesthetics, and habitat for wildlife and aquatic species to mitigation of flood events and the filtration of pollutant loads. Accelerating rates of growth in the valley and ensuing projected development patterns have the potential to significantly impact and degrade these water resources if development is not well planned to ensure the protection of water quality in the watershed. Key concerns associated with development impacts on water quality include:

- Increasing quantity of stormwater flows associated with increasing impervious surface area and diminishing infiltration rates; and increasing transfer of groundwater to surface water due to shifting land uses and associated shift in source water use, as agricultural water use (surface water) is replaced by commercial and residential water use (groundwater). The implications of increasing stormwater flows include increased flooding (waterways and canal systems), stream and canal bank instability, and increased sedimentation.

- Increasing inputs of pollutants into waterways with greater runoff volumes, thereby increasing the movement of pollutants into surface waters. The implications include the entry of an increasingly toxic suite of chemicals into water bodies and the potential contamination of groundwater in areas of groundwater recharge (i.e., along streams exiting mountains toward the east and south of Cache Valley)



Recommendations

It is recommended Cache Valley implement five key strategies during the planning process to ensure the protection of water quality under projected development patterns:

- Plan land use and decrease impervious surface area
- Protect natural and agricultural areas
- Establish buffers
- Create better site design
- Update zones and ordinances to facilitate the use of innovative sustainable design.

SENSE OF PLACE



The South Corridor is the main thoroughfare to appreciate the landscape of Cache Valley. The SDAT identified five main issues to preserve a sense of place for the Cache Valley:

Preservation and Protection of the “Gateway”

- As a visitor comes in, the first glance of the valley is stunning. Preserving the quality of this distant panoramic view to the valley is crucial. Logan, surrounded by this green “quilt” and the mountains, is a major part of the landscape identity.
- At the same time, preserving the enclosed character of the canyon/gateway as one leaves Cache Valley is equally important.
- Preserving the hierarchy of distinguishable architectural elements such as the Mormon temple and the Old Main is also very important. Avoid the development of new vertical architectural elements (such as signage of fast food, for instance, especially in foreground along the corridor) which would not only create visual competition but would destroy the sense of place and sense of arrival.

- Night time views are as important as day time views. Avoid lighting at the foreground of the gateway which would compete with Logan’s night view (e.g., by keeping black out zones along the corridor and in proximity of the gateway).

Views and Vistas

- Identify key points along the corridor that need to be preserved. The sense of place team should drive in the fields to locate, identify, and create a hierarchy of places/nodes to preserve such view points. Identify and sacrifice zones of less visual significance. For example, as one comes in the valley, looking at Wellsville and its tabernacle with vegetation in the foreground would be a good example of a place to preserve by avoiding development in that foreground.



The Mormon Landscape

- *The Village Pattern*: Preserve when possible the original setting of villages which were set six to eight miles apart. This is a very important characteristic of the setting of the valley.
- *Farmsteads*: At a smaller scale, preserve individual farmsteads and barns (e.g., Dc. Pierce barn and Jensen farm which are now American West Center) along the corridor.
- *Canal system*: Preserve and visually enhance the canal system which crosses the corridor in the Logan downtown area. It is an intrinsic part of the Mormon landscape.



Natural Systems of the Valley

- Identify key areas to view water/wetlands and riparian vegetation along the corridor (Logan is not just a desert plateau, which makes it also very special)
- Identify, preserve, and enhance views at the crossings of such rivers as the Logan and Little Bear rivers (before Wellsville)
- Identify and prioritize key vegetation areas/ patches

Agricultural Landscape

- Crucial to the landscape identity of the valley is its agricultural use. General open spaces would not portray this specific character that forms Cache Valley as with agricultural land use (i.e., seeing cows and patches of crops).



TRANSPORTATION



What Is Transportation and a Transportation System?

- A mechanism for commerce—movement of goods and people
- A physical entity in the built environment—shaper of place, form, and visual presence
- A physical entity in the natural environment—affects water tables, pervious surfaces, heat and reflection, habitat removal or displacement, barrier or hazard
- A sociological and cultural impact—shapes the way people move, behave, relate to one another, locate residences and family members

Needs and Demands of the Transportation System in Cache Valley South Corridor

- Accommodate movement within the valley
- Maintain higher speed travel through the corridor
- Move freight and support the economic foundation of the valley (agriculture, industry, and connections to the university)

- Accommodate and attract retail, manufacturing, and industrial development
- Support and accommodate agricultural production activities, including agricultural vehicles
- Have workable air quality event response capability
- Provide access to recreational opportunities
- Preserve local character and natural and cultural environments
- Have livable and pedestrian-friendly community and residential streets
- Function as the transportation lifeline between the valley and outer destinations in the region, state, and nation
- Allow mobility that minimizes air pollutants and emissions
- Accommodate future growth and travel demands

Initial Principles

- Transportation system preserves, promotes, and sustains agricultural activity
- Transportation system provides for the movement of freight through flexible, intermodal/multimodal options for transport and distribution (e.g., rail, air, roads)
- Transportation system provides for efficient, attractive, alternative transportation (e.g., transit, bike, walking, carpooling)
- Transportation system accommodates through traffic to serve the valley's function as part of a national network
- Transportation system improves or minimizes poor air quality
- Transportation system protects and works while minimizing impacts to watersheds and wildlife habitats
- Bike paths and hiking trails are opportunities to attract economic development as well as provide an alternative sustainable mode and improve local health and quality of life
- Community pedestrian-friendly pathways should be a forethought in development, not an afterthought
- A transportation system should be built based on proactive land use planning, not reacting to haphazard demands of land use and attempting to superimpose a transportation solution subsequently
- There should be more efficient use of current resources to save taxpayer dollars, landscape, and land

- Critical missing links in the transportation network of all modes should be finished
- Sustainable maintenance of the efficiency of the transportation system should drive land use development decisions
- Land use should be coordinated with development to promote a balanced transportation system (locate origins and destinations closer together)
- The grid should be restored, finished, and adhered to

Recommendations

- Maintain 89/91 for intraregional travel and fully use 165 for inner-valley trips, thereby offering a variety of mode choices; focus locally serving development such as higher density residential, retail, and business on the 165 corridor; allow uses requiring regional access such as manufacturing, research, or agricultural industry on the 89/91 corridor if limited agricultural land is to be converted for development
- Utah Department of Transportation (UDOT) should purchase development rights of agricultural land abutting 89/91 rather than just purchasing limited access easements
- Pursue national scenic by-way designation for 89/91 corridor
- Construct multiuse, minimally improved, and pervious (e.g., gravel) trail/facility parallel to 89/91 between Western Heritage Center and Nibley to accommodate north/south movement of farming vehicles and bicycles/pedestrians; separate from high-speed roadway with “rain garden” strip to accommodate runoff; examine opportunity for at least one overpass (not interchange) across 89/91 primarily to serve the east/west mobility needs of agriculture
- Construct dedicated facility for bus rapid transit on 165 to serve community nodes along corridor; look into local production of custom vehicles for service and local production of clean fuel for operation as economic development strategy and local sustainability; look into case studies of exclusive transit in smaller communities; look into sales tax TIF to help fund transit capital costs
- Transportation nodes on 89/91 providing east-west connections to 165 are opportunities to also provide trail access and vistas and views; prioritize for acquisition of UDOT access easements
- Create or enable a regional authority to coordinate transportation, land use, and economic development

Putting It All Together

- Transportation must be a forethought, not an afterthought.
 - a. Build in walkability
 - b. Allow the transportation network to guide and define development opportunities in location and type
 - c. Develop land uses that promote and support the use of the full transportation system (e.g., transit, walking, biking, carpooling, rail, water)
 - d. Have the strength to say “no” if the development is not right for maintaining transportation objective
- Create a flexible system full of options, opportunities, and redundancies.
 - e. Further develop transit, particularly BRT opportunities
 - f. Promote and accommodate biking and walking as commuting options as well as for community health, economic development drivers, tourism, and local quality of life
 - g. Increase rail and air freight options
 - h. Restore the grid and stick with it to provide more and better east-west and north-south connections
- Efficiently use what presently exists (i.e., “fix it first” or “first, do no harm”)
 - i. Recalibrate unit of measure of performance from vehicle through-put to person-through-put and unit of goods through-put
 - j. Use 89/91 as priority for regional mobility
 - k. Focus on establishing 165 as regional spine for livable valley
 - i. Not a dumping ground for development; focus on good, well-designed development that serves local community needs
 - ii. Walkable place that promotes walking, biking, and transit
 - iii. “Park once” concepts serving clusters of destinations

APPENDIX

ABOUT THE AIA SUSTAINABLE DESIGN ASSESSMENT TEAM (SDAT) PROGRAM

The SDAT program is an interdisciplinary community assistance program that focuses on the principles of sustainability, planning, and designing with a sustainable future in mind, and represents an exciting new chapter in the AIA's history of supporting communities with volunteer design expertise. The Cache Valley SDAT is the first completed project under the new program launched in 2005.

Background of the SDAT

The SDAT program focuses on the importance of developing sustainable communities through design. It is modeled on the AIA's R/UDAT (Regional and Urban Design Assistance Team) program, one of the AIA's longest-running success stories, in operation since 1967. While the R/UDAT program was developed to provide communities with specific design solutions, the SDAT program provides broad assessments to help frame future policies or design solutions in the context of sustainability and helps communities plan the first steps of implementation.

SDAT Principles and Values

The SDAT program is based on a design process that:

- Creates solutions that solve many problems at the same time and for the same cost
- Creates solutions that are holistic—achieving a relationship between humans and the natural environment
- Creates solutions that are compelling and visual
- Achieves a balance between cultural, environmental, and economic systems.

The SDAT program upholds the AIA design assistance values of:

- A multidisciplinary team-based approach
- Objectivity of all participating team members
- Use of an open public process.

SDAT Results

Many communities are immobilized by conflicting agendas, politics, personalities, or even the overabundance of opportunity. Further, many communities have not yet taken stock of their current practices and policies within a sustainability framework and others have identified issues of concern but desire assistance in laying out a plan of action for a sustainable future. The SDAT process ensures that alternative solutions are given a fair hearing and that options are weighed impartially.

The SDAT Process

- Informs the community of opportunities and encourages them to take action to protect local and regional resources
- Helps the community understand the structure of the place at various scales and contexts—from regional resources to the neighborhood scale
- Explores and articulates the larger contexts and interactions of ecological, sociological, economic, and physical systems
- Visualizes potential futures
- Recognizes and describes the qualities of a place by preserving the best elements of the past, addressing the needs of the present, and planning for the needs of future generations
- Identifies and describes choices and consequences
- Connects plans and actions
- Advances the principles of quality sustainable communities
- Helps the community define the roles of various stakeholders
- Develops a roadmap for the implementation of more sustainable policies and practices.

SDAT Participants

The key to SDAT success is diversity and participation; the process involves multiple disciplines and multiple stakeholders. The SDAT process includes not only the expert team but also government agencies and officials, private businesses, schools and students, community members, and other parties as appropriate.

SDATs bring a team of experts to work with community decision-makers to help them develop a vision and framework for a sustainable future. Team members are highly

respected professionals selected on the basis of their experience with the specific issues facing the community. These experts are from across the United States and volunteer their time to be a member of the SDAT. To ensure volunteer objectivity, SDAT members agree to refrain from taking work for three years from the date of completion of the SDAT.

The lack of bias, the professional stature of the SDAT members, and the pro bono nature of the team's work generates community respect and enthusiasm for the SDAT process. This process encourages the participation of stakeholders in the community. The passion and creativity that are generated by a top-notch multidisciplinary team of professionals working collaboratively can produce extraordinary results.

For each SDAT project an individual SDAT is assembled based on the project's unique issues. A typical team consists of a leader and five to seven members (depending on the scope and type of project) in addition to an AIA Center for Communities by Design staff person.

Local Steering Committee. The steering committee is the key organizing group for an SDAT project. They are responsible for assembling local and regional information, organizing the preliminary meeting and SDAT visit, and generating local media coverage during the entire project. After the SDAT visit, the steering committee typically evolves into a group that is dedicated to the implementation of the SDAT recommendations.

Cache Valley SDAT Local Steering Committee

Steering Committee Chair, Mayor Lynn Welker, Nibley

Mayor Ruth Maughan, Wellsville

Mayor Gordon Olson, Hyrum

Lynn Lemon, Cache County Executive

Craig Petersen, Chair of Cache County Council

Wendell Morse, Director of Development Services and Cache County-wide Planner

Sandra Emile, CEO, Cache Chamber of Commerce

Loren Anderson

Michelle Mechem

Noelle Cockett

Jay Nielson

Jeff Gilbert

Jack Nixon

Mark Hilles

Evan Olsen

Tom Jensen

Joyce Pependorf

Mac McKee

National Team

Dan Williams, FAIA, *SDAT Leader*

Daniel Williams Architect

Seattle

Ken A. Bowers, AICP, PP, *Economics*

Phillips Preiss Shapiro Associates, Inc.

New York City

E. Ann Clark, PhD, *Agriculture*

University of Guelph

Guelph, Ontario

Elaine Lai, *Water*

U.S. Environmental Protection Agency

Washington, D.C.

Ray Mohr, *Air Quality*

Colorado Department of Public Health and Environment

Denver

Karina Ricks, AICP, *Transportation*

District of Columbia Office of Planning

Washington, D.C.

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Local Technical Team

Eight teams of local experts were formed to identify technical issues and principles that should be considered part of the Sustainable Design Assessment process for the SDAT South Corridor Transportation Study. The teams with their chairs included:

Team	Chair/Co-chair	Affiliation
Air Quality	Ed Redd Randal Martin	Medical Director, Bear River Health Department Associate Professor of Civil and Environmental Engineering, Utah State University
Water	Nancy Mesner	Ext. Water Quality Specialist, Utah State University
Growth	Richard Toth	Professor, Environment and Society, Utah State University
Sense of Place	Caroline Lavoie	Associate Professor, Landscape Architecture and Environmental Planning, Utah State University
Wetlands, Wildlife, Open Space	Tom Twedt	President, Bio-West Environmental Consultants
Valley Economics	Arthur Caplan	Associate Professor of Economics, Utah State University
Agriculture	Paul Rasmussen	Director, Utah Agricultural Experiment Station, Utah State University
Transportation	Jeff Gilbert	Director, Cache Metropolitan Planning Organization

Mac McKee, director of the Utah Water Research Laboratory, and Loren Anderson, head of the Department of Civil and Environmental Engineering at Utah State University, served as cochairs of the Technical Committee and representatives to the Steering Committee.

The teams were formed by selecting team chairs who, in turn, assembled their respective teams. Team chairs were nominated by members of the Steering Committee. The names were submitted to the technical cochairs who worked with members of the Steering Committee in selecting the Technical Committee chairs. In making the selections, consideration was given to expertise, knowledge of local conditions, personal interest, and availability to participate during the period June 28–30, 2005.
