Urban sprawl has been blamed for many things, but air pollution isn’t always one of them. Usually it’s loss of farmland, blighted downtowns, and longer commutes that drive the smart growth agenda.

But in Bakersfield, California, residents are reluctantly waking up to the need for a new approach to urban planning that minimizes air pollution.

Last year the American Lung Association ranked Bakersfield as having the third-worst air quality in the nation. The city is part of the federally designated San Joaquin Valley air basin, the largest in the nation and the one with the second-worst air quality in the U.S., behind only the notoriously smog-blurred Los Angeles region.

Compounding the problem, Bakersfield is also considered a poster child for sprawl. A Brookings Institution study in 2001 ranked it as the most sprawling city in California, and the fourth worst in the U.S.

The region is blessed with an abundance of affordable land and a dependable water supply, unlike many areas of California. And with double-digit unemployment straining the region for decades, politicians have been reluctant to impose new development standards, fearing they would harm the construction industry.
So, until now, there have been few incentives for smart growth in Bakersfield (pop. 266,000), California’s 12th largest city. Local development codes contain no requirements for compact growth, mixed-use development, or even pedestrian-friendly neighborhood design. The typical new Bakersfield housing subdivision is a network of looping streets and cul-de-sacs, with high sound walls sealing off each neighborhood from the next. Local leaders have found little reason to change this pattern, and they continue to question planning’s role in improving air quality.

“There’s no science that says the way projects look on the ground would reduce emissions,” says Stanley Grady, planning director for the city of Bakersfield. “Urban design, by itself, is not what’s going to improve air quality.”

Change is coming
Yet the public is clamoring for action as they suffer the city’s brown skies and rising rates of asthma and other smog-related health problems. And, in fact, several small steps are being taken along the road to lung-friendly urban planning. Among those steps:

• The local Sierra Club chapter has filed successful legal challenges against several Bakersfield residential developments to protest their impact on air quality. The club has agreed to settle each case in return for a payment by the developer of $1,200 per home. An appointed board, representing all parties, will spend the money on other pollution control projects, such as regional bike paths and clean-fuel engine conversions.
To avoid more such lawsuits, both the city and Kern County, which jointly administer the Metro Bakersfield general plan, are working with developers to adopt additional residential pollution controls.

Until now, a subdivision has escaped scrutiny if computer models showed it would generate no more than 10 tons of air pollution annually, an amount considered "significant" by the San Joaquin Valley Air Pollution Control District, the state agency that regulates regional air quality. Now, city and county planners are working with residential developers to mitigate each project's emissions down to zero. The new strategy relies on a menu of pollution control projects that includes documented emission reductions.

In one recent proposal to build 412 homes on quarter-acre lots, studies showed the project would cause 19 tons per year of air pollution. To achieve an equal amount of pollution reduction, the developer agreed to crush older model cars, contribute money toward the purchase of new low-emission public fleet vehicles, and replace stationary diesel engines, such as those used in agriculture, with cleaner burning models.

"We're quantifying specific measures that a project proponent has to do that improve air quality," says Ted James, AICP, Kern County planning director. "The important things are that we give applicants a choice, and that there is a measurable benefit."

For the first time ever, city and county leaders last year also adopted a tiered transportation impact fee designed to encourage infill development. The fee was originally adopted in 1991 charged developers $1,179 per home to cover a project's impacts on the regional road network. (Consultants at the time recommended a fee of $6,709 per home.) The fee has been increased in small increments since then, reaching $2,466 in early 2003.

Last year, the city and county increased the fee to $2,882 in a designated core area of Bakersfield, and $5,813 elsewhere in town. It is hoped this tiered fee will discourage sprawl by making development on the edges of town more expensive.

**Last resort: Pay to pollute?**

The biggest change on the horizon is a new development fee intended to offset growth's impact on air quality. Called an "indirect source rule," it would give developers a choice between paying a fee to offset the pollution their projects cause, changing their projects to reduce air pollution, or some combination of both. Every project, commercial and residential, would be required to correct a fixed percentage of its emissions. That percentage has not been decided yet.

Proposed by the valley air district, the indirect source rule would be the largest application of this concept ever in the nation. Builders could adopt onsite improvements such as additional tree canopy, easy access to public transit, and energy efficiency measures. They could also get credit for locating close to the center of town, mixing commercial and residential development, and building at higher densities.

If such onsite changes did not offset enough pollution, the developer would pay a fee to abate for the rest. Fees collected under the rule would then be spent on other air-quality projects, such as consumer rebates for low-polluting lawnmowers, building telecommuting sites, or subsidizing public transit.

"We'd like to think this is an incentive to grow smart and not have leapfrog development," says Jennifer Barba, a planner and air quality specialist charged with developing the rule for the valley air district. "But some might see it as a pay-to-pollute situation. It just depends on what the developer chooses to do. We're just trying to push it along."

The rule is scheduled for adoption in October. It was tried once before, in the early 1990s, but was crushed by opposition from developers. Now there are new imperatives: The rule is already factored into emission reductions in the valley's federally approved plan to control particulate pollution, and a new state law, SB 709, sponsored by Sen. Dean Florez (D-Shafter), specifically requires the district to adopt an indirect source rule.

The air district has no direct legal authority over mobile sources (cars and trucks) or urban planning decisions. So the indirect source rule is one of the few tools for addressing the rising problem of growth-related air pollution.

"There's a significant amount of growth occurring in the entire basin, and that growth is offsetting some of the reductions we're getting from stationary sources, or traditional sources," says Barba. "In the minds of the general public it seems to be, not out of control, but growing rapidly."

**Air pollution is everywhere**

The valley's primary summer pollution problem is ground-level ozone, formed when hydrocarbon and nitrogen oxide emissions combine in the presence of sunlight. In the San Joaquin Valley, vehicle exhaust causes two-thirds of these emissions.

Ozone is natural and desirable in the atmosphere's highest altitudes, where it helps shield the planet from harmful ultraviolet radiation. But at ground level, it destroys lung tissue and hinders crop and forest growth.

In winter, the primary culprit is particulate pollution caused by combustion. Among the biggest sources are woodburning for home heating and the open burning of crop waste on farms. Particulates contribute to smog formation, but also cause a wide range of health problems, including asthma, bronchitis, and heart disease.

Last year, with support from the Building
making access difficult except by car. A more pedestrian- and transit-friendly pattern can be found in the city’s Oleander area (immediately above).

Resources


Industry Association, the valley air district passed a rule that bans heating with wood during episodes of poor air quality, and requires older wood stoves to be removed when existing homes are sold. It also strictly limits the number of fireplaces allowed in new development.

In the San Joaquin Valley, planning for air quality is especially important, because the region is burdened by a combination of topography and weather that make air pollution worse. The valley, one of America’s most productive farming regions, is surrounded on three sides by mountains. The north end is open to prevailing winds, which blow air pollution from north to south.

Bakersfield sits at the south end of the valley. Here, pollutants pile up against surrounding mountains and stagnate. In the summer, continuous sunlight and temperatures that regularly top 100 degrees create a perfect menu for cooking emissions into harmful smog. In winter, temperature inversion layers cause the valley’s infamous rule fog and trap pollutants at ground level. Both in winter and summer, winds are usually light, preventing dispersion.

Sprawl makes air pollution worse by focusing growth at the edges of cities, forcing people to drive farther to reach work and shopping. It puts more cars on the road for short trips, increases idling time at congested intersections, and limits opportunities for walking, biking, and public transit.

Vehicles also cause particulate pollution from brake and tire wear, and by stirring up road dust. These sources are largely unregulated, and difficult to control. Experts have proved that the more cars you have in a community, and the more they are driven, the more particulates end up in the air people breathe.

Then there are consumer products that come along with new housing. Every lawnmower, barbecue, motorcycle, and can of paint becomes part of the problem. Many of these fall into a polluter category called “areawide sources.” These are expected to increase with population growth. Some can be contained via smart growth development, some cannot.

Growth-related pollution also comes from the commercial development that inevitably accompanies new housing. Every new gas station, dry cleaner, auto repair shop, and restaurant represents a small but incremental increase in air pollution. Many of these are regulated as “stationary sources.” Other cities have used their planning authority to ban or restrict obvious polluters in this category, such
The Long Arm of Federal Law

The federal Clean Air Act is the guiding instrument for most of the nation’s pollution control efforts. The first version came in 1955, ironically coinciding with the explosion of suburbia in America.

That version did nothing to prevent air pollution. It merely granted $5 million annually for five years of research on the subject. But most importantly, it recognized the public dangers of air pollution, and reserved for Congress the right to control it.

Those controls arrived in future amendments to the law, notably in 1970 and 1990. These rewrote established national standards for specific pollutants and regulated vehicle emissions for the first time. The 1970 amendments also created “new source performance standards” to regulate emissions from industrial facilities when they expand or enter a community.

These new source standards are one part of the act that the present Bush administration seeks to alter with its “Clear Skies” program, a collection of Clean Air Act amendments with a fancy name. Critics say the name is misleading, claiming the amendments will actually weaken some pollution controls, at least in the near term.

For starters, the amendments raise the threshold at which power plant upgrades become subject to new source review. In practice, this means they would not have to upgrade to the latest pollution control technology when they make significant plant improvements. This is a particular concern wherever coal is burned to make electricity, because many use the oldest technology to burn the dirtiest fuel. Coal emissions are a leading cause of acid rain and global warming, in addition to a host of harmful health effects.

Clear Skies would also rely more heavily on a “cap and trade” system to control emissions. Many environmental groups support the basic approach because it has already helped reduce sulfur dioxide and nitrogen oxide emissions. A maximum amount is set for each pollutant. Once the limit is reached, polluters gain credits for reducing their emissions, which can then be sold to others or held in reserve to allow expansion. But the devil is in the details: Where the cap is set and when it arrives are important.

The Bush administration proposes to raise the caps for sulfur dioxide and nitrogen oxide, and extend the deadline for reaching the caps to 2018 (six and eight years longer, respectively, than present deadlines for sulfur dioxide and nitrogen oxide). The administration would also add mercury to the program, setting a 2015 deadline for reaching the cap. Critics say existing Clean Air Act rules that rely on mechanical controls would do more to reduce mercury.

Twelve states and a number of advocacy groups, including the American Lung Association, successfully sued the EPA to stop the new source review changes. Those changes are now under court review. Remaining changes in the Clear Skies program are still being debated in Congress.

A curtain of brown haze often hangs over Bakersfield.

as drive-through restaurants and banks. Bakersfield has not taken this step.

Old problem, new culprit
Oil extraction and refining have been a major part of Kern County’s economy for a century—and, historically, its biggest source of air pollution. But modern pollution controls have cleaned up the industry so much that, for the past seven years, Kern County has recorded fewer days above the federal one-hour ozone standard than Fresno County, its larger neighbor to the north, where the oil industry is not as significant.

Overall, smog-forming emissions from stationary sources like factories, power plants, and small businesses have been slashed to one-fifth of their 1980 levels. Also, tailpipe emissions from cars and trucks are expected to continue declining, thanks to California’s strict emission controls and clean-fuel mandates, the toughest in the nation. But the rate of improvement will level off as the population grows and the vehicle-miles-traveled number increases.

Projections by the state Department of Finance show that Kern County will outgrow Fresno by 2020 to become the largest county in the San Joaquin Valley. Air pollution linked to the 37,000 homes expected to be built in metro Bakersfield in that period will be equal to building 200 oil refineries, or enough for one in every schoolyard in the county.

Already, the growth in the number of cars and light trucks registered in Kern County exceeds the state average. And the average daily miles traveled by these vehicles have increased at twice the rate of population growth, largely because of sprawl development. The valley air district supports a more compact development pattern, especially incorporating mixed uses, that could reduce vehicle trips and bring about a faster improvement in air quality.

Transportation is inevitably linked to air quality, and Bakersfield has not kept pace with the growing population’s need for transportation, whether it’s public transit or the road network. The town is bisected by California Highway 99 and rapidly sprawling westward, across some of the nation’s most productive farmland, toward Interstate 5. Both highways run north-south. The city has no east-west freeway connection, leaving cross-town commuters dependent on surface streets.

Those streets are becoming slower and more crowded every day. Projections show that a total of 63 road segments in metro Bakersfield are projected to fall to an “F” level of service by 2020, meaning traffic volume exceeds the road’s designed capacity and gridlock is com-
mon. In 2000, only two roads were rated “F.”

Kern County is $2 billion short of the money it needs for new roads just to meet current demands, partly because the original transportation impact fee was set so low in 1991. A group of community leaders is working on a ballot measure to increase the sales tax to pay for road improvements. Its prospects for approval are far from certain given California’s present financial woes. In short, Bakersfield is a sprawling, freeway-dependent city that has not built a new freeway in 30 years.

Public transit in Bakersfield is limited to the bus system, Golden Empire Transit, which does not benefit from impact fees paid by developers. It has made great strides to adopt clean-fuel buses—as has the city for its own fleet of vehicles—but sprawl has hindered its ability to serve the community. Great distances between home and workplace make taking the bus expensive and time-consuming. Walled subdivisions, which keep buses from moving easily between neighborhoods, have the same effect.

More sprawl ahead?
Other communities in the San Joaquin Valley have recognized the connection between sprawl and smog. In 2001, for instance, Fresno County’s government, farming, and development leaders formed a partnership to fight sprawl. Known as the Fresno Growth Alternatives Alliance, the group produced a set of smart growth standards later adopted by county leaders and every city in the county. The standards, dubbed “A Landscape of Choice,” call for narrower streets, greater densities, more infill development, and transit-friendly planning, among other things.

And in 2002 the city of Lemoore (pop. 21,000), in Kings County, took a bold step by imposing smart growth development standards on all vacant land. The new rules require narrower grid-patterned streets, varied architecture, shorter building setbacks, a thicker tree canopy, and a variety of traffic-calming measures.

Founded in 1873, Bakersfield already has a model of infill development right within its oldest neighborhoods. Clustered around the original downtown, these neighborhoods have the very features that nearby communities are trying to impose. However, the present growth pattern requires different uses to be separated, and local leaders are reluctant to revive the older standards today.

“You have to modify your development standards to support that kind of land-use planning,” says Grady. “You'd actually have to require people to build differently than they’re doing now. There’s no science that shows that because you put trees on the street that people aren’t going to drive their cars.”

Instead, local officials favor incentives to encourage alternative construction modes. James notes that county zoning ordinances encourage mixed use, for example, but he could not recall a single mixed-use project being built as a result.

“Some would say that it’s the local government’s job to mandate that, to make it happen. To me, that’s not the way it happens,” says James. “Mandates turn people away. We need to be approaching this in a proactive way by creating incentives. We need to create the environment so innovative solutions can come along.”

City and county officials are watching warily as the air district’s indirect source rule moves forward. They’re afraid it will add excessive red tape to the development process, and they want to ensure that any emission reductions claimed under the rule are real and measurable. They also want a guarantee that fees generated by local development under the rule are spent locally.

Controversial though it is, the rule has one limitation: Local zoning may limit which on-site measures developers can adopt to avoid paying the impact fee. For instance, Bakersfield zoning does not allow mixed-use development except by special exemption. If it’s not there for builders to choose, in other words, they may simply pay the fee and sprawl will continue.

“Air-quality issues are very much integrated with land-use planning issues,” says James. “We need to make sure development is compact and contiguous with other development. But are we at a point where we need to stop growth? No. Are we still facilitating sprawl? Well, that’s the argument, I guess.”

Matt Weiser, a staff writer for the Bakersfield Californian, won a first place award in the 2004 APA Journalism Award Competition for his 2003 newspaper series on air pollution in Bakersfield.
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