

# **Kansas Department of Transportation's Experience with Procuring Wi-Fi at Rest Areas**

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## **ABSTRACT**

In 2005 the Kansas Department of Transportation embarked on a public-private partnership to acquire wireless Internet (Wi-Fi) services at Kansas rest areas. The effort is now reaching fulfillment, in that initial installations are in place and functional. A long-term contract with a Wi-Fi provider has been established, a web portal has been developed and implemented, and assessment of the operation is about to commence. This paper reviews several aspects of the project, including stakeholder interests, objectives, procurement method, impact on rest area operations, lessons learned, and projected benefits, such as an expanded communication infrastructure and outlets for local and regional travel information.

**Key words: rest areas—Wi-Fi—wireless Internet**

## **INTRODUCTION**

This paper documents the efforts within the Kansas Department of Transportation (KDOT) to secure wireless Internet (Wi-Fi) capability at state rest areas through a public-private partnership. The effort began in the spring of 2005 and is now coming to fulfillment in 2007, as service at four rest area locations is being activated in a pilot test. This service, referred to as Wi-Fi at rest stops, is projected to provide several benefits for KDOT, other state agencies, the traveling public, and the private sector partner. This paper documents the timeline, stakeholder interests, objectives, and lessons learned in the process of securing this service for the state of Kansas.

## **DEVELOPMENT OF THE IDEA**

The initiative began in March 2005 at the Intelligent Transportation Systems (ITS) Heartland conference hosted in Topeka, Kansas, where a presentation by Mark Wheeler from I-Spot Networks, LLC, outlined a program by which Iowa was able to provide a similar service for Iowa rest areas. I-Spot Networks proposed a plan to install wireless Internet service at all Iowa rest areas at no charge to the state. The public would gain free access to Internet content, and the private firm would recoup and profit through advertising revenue. Although this business model would ultimately prove unsustainable, the system was initiated and deployed statewide in Iowa and, by 2005, was fully functional. The presentation at the ITS Heartland conference stirred interest among KDOT attendees.

On April 26, 2005, KDOT invited representatives from the Iowa Department of Transportation and I-Spot Networks to speak at KDOT headquarters. Representatives from various divisions and bureaus within KDOT were invited to attend, as well as representatives from the Kansas Highway Patrol, the Kansas Department of Commerce, and the Federal Highway Administration. About 20 to 30 people attended the initial meeting. Unlike Iowa, administration of the state's rest areas is not consolidated to a single office. Responsibility for Kansas rest areas falls primarily under KDOT's Division of Operations. While contracts for cleaning, vending, and staffing are centrally administered, mowing and other concerns are addressed by the corresponding KDOT districts.

At the April 26, 2005 meeting, Steve McMenamin, Iowa Rest Area Coordinator, presented the Iowa program from the state's perspective, in terms of benefits and risks to the state. The private vendor, I-Spot Networks, presented the business model through which the services were procured. At the same time as the meeting, I-Spot Networks presented a proposal to KDOT to extend the basic service to Kansas rest areas under similar terms as that of Iowa, though no action was taken on the proposal.

A follow-up meeting scheduled for May 17, 2005, brought together the various Kansas stakeholders in the project. This group of representatives eventually constituted the core of the project steering committee and consisted of representatives from the following stakeholder agencies:

- Kansas Department of Commerce, Division of Travel and Tourism
- Kansas Highway Patrol
- Federal Highway Administration
- Kansas Turnpike Authority
- KDOT, Division of Operations, Bureau of Construction and Maintenance, Bureau of Materials and Research, Information Technology Support
- KDOT, Division of Design, Environmental Section
- KDOT, Division of Administration, Bureau of Fiscal Services, Bureau of Computer Services
- KDOT, Division of Planning, Bureau of Transportation Planning, ITS Unit

- KDOT, Office of Chief Counsel
- KDOT, Public Information, Advanced Traveler Information Systems

## **OBJECTIVES, BENEFITS, AND RISKS OF WI-FI SERVICE AT KANSAS REST AREAS**

This meeting on May 17, 2005, served two primary purposes. It helped focus the objectives and expected benefits of providing Wi-Fi at rest areas, and it identified risks and potential negative consequences that should be guarded against. These objectives, benefits, risks, and consequences are outlined below.

### **Objectives and Benefits**

- Wi-Fi provides or improves access to traveler information to aid travelers in making informed decisions to improve safety, make travel more efficient, and increase customer satisfaction. This may include free access to public information, such as Kansas 511 (road condition and road closure information), Amber Alerts, weather conditions and forecasts, and state tourism information. It also includes access to private traveler services, such as hotel reservations, dining, and other local attractions.
- Wi-Fi provides Internet access by subscription to the traveling public for general purpose viewing. This includes access to email and other websites that are not necessarily travel-related. This provides a valuable service and encourages fatigued motorists to take needed breaks.
- Provide KDOT personnel access to Internet connectivity for KDOT business purposes. This, in essence, extends to the field some of KDOT's enterprise applications, such as the Construction Management System, Comprehensive Project Management System, and KDOT email. KDOT performs several field data collection activities, and Internet access would allow for convenient and more frequent uploads of data to central systems, as well as access to department data while in the field.
- Wi-Fi provides Internet connectivity to other safety/emergency personnel. This is primarily seen as a benefit to the Kansas Highway Patrol. Although Kansas has a statewide radio voice system, mobile data is extremely limited, except in urban areas. Wi-Fi at rest areas would provide the state patrol with "islands" of information connectivity distributed throughout the state. Not only would this benefit the highway patrol, but it may also increase the frequency of patrol presence at rest areas and thus enhance rest area security.
- The Kansas Department of Commerce operates the Kansas State Welcome Centers. The western-most center is co-located with a Kansas rest area. The commerce department views Wi-Fi not only as a valuable attribute to have at the welcome center, but also as an effective method for promoting Kansas goods and services through use of the free portal provided by the Wi-Fi project.
- Information kiosks at Kansas rest areas are a longer term objective. Previous demonstrations used satellite feeds to deliver weather information to rest areas. Data communications capability via Wi-Fi, particularly in rural areas where data connectivity options are scarce, is a major step towards enabling information kiosks.
- Similar to information kiosks, data connectivity at rest areas opens the possibility for several other potential services and applications. Although none are specifically planned, Wi-Fi can enable such services as emergency telephones, remote surveillance, changeable message signs, and traffic sensing at rest areas.

## **Risks and Possible Negative Consequences**

- Kansas rest areas, particularly rural rest areas on interstate routes, have a history of deviant activity during nighttime hours. This includes both criminal activity, such as prostitution and drug trafficking, as well as noncriminal but otherwise undesirable behavior, such as lewd and lascivious activity and damage and destruction to the facilities. By providing additional data connectivity, the DOT risks further enabling such activity.
- Truck parking facilities at Kansas rest areas are insufficient to handle demand. Trucks can be seen parked on shoulders of on-ramps and off-ramps at many Kansas rest areas, particularly during nighttime hours. Such practices create a safety hazard to the traveling public. The risk is that Wi-Fi will attract even more commercial truck traffic, exacerbating the problem.
- Publicly available Internet access may create a financial liability. A bystander may inadvertently view a website on another traveler's computer screen that he or she considers inappropriate and offensive. If Wi-Fi connectivity is viewed as a public service provided by KDOT, access to the objectionable content would be seen as state endorsed. Such a scenario could possibly create both a financial and political liability.
- Advertising as a method of revenue generation for the vendor creates additional risks for KDOT. If the service is viewed as a public service, the product or service advertised could be viewed as state endorsed. The nature of the advertised product and services, particularly if they border on adult content, have the potential of creating a public relations risk for KDOT.
- The business model of the vendor may become unsustainable, as exhibited in Iowa.
- Nonstate telecom equipment would need to be mounted and integrated into the KDOT rest area infrastructure. Improper or careless installation could cause harm to the structures. (This was not initially brought up as a project risk, but was identified later during the installation phase.)

## **Other Considerations**

In addition to the objectives and risks mentioned above, the project also provoked a debate concerning the most appropriate method for obtaining Internet connectivity at state rest areas. The KDOT information technology department suggested that the state may be best served by supplying the data link using state resources rather than through a private company. Although there were many considerations in this debate, the consensus was ultimately reached to view Wi-Fi in much the same way as the vending services that are supplied at rest areas, i.e., through a consolidated service contract. This not only limits the manpower resources needed to maintain the system, but also provides a layer of liability protection in light of the risks previously expressed. Also, any attempt to install the Wi-Fi services using state resources could not take advantage of any potential revenue stream in order to pay for equipment and upkeep. Although the Iowa model relied wholly on advertising revenue, other business models, such as that employed in Texas, have allowed the private vendor to sell subscriptions for unrestricted Internet access as a way of recouping costs.

The steering committee met again on June 23, 2005. The risks of the project were mitigated through various methods, as discussed below.

## **RISK MITIGATION STRATEGIES**

- The primary concern of the KDOT Division of Operations was possible adverse effects on rest area operations. This included both the truck parking problem and issues related to deviant behavior. Anecdotal observations from Iowa's program indicated no undue effects. However, differences in rest area management (Iowa rest areas are typically staffed 24/7) and rest area design between the two states provided a reason for concern. As a result, the Kansas Wi-Fi

program was structured as a one-year pilot test at a limited number of rest areas, with the option of renewing the contract for up to an additional four years with extended service to the entire state. The one-year pilot program allowed KDOT to assess the impact on rest areas. If the impact was negative, KDOT could choose not to renew the contract and thus effectively terminate the program. Also, as part of the technical requirements of the request for proposals (RFP), a mandatory time restriction for individual Internet access was to be enforced at the rest areas.

- Concerns over liability from objectionable content were discussed, not only with stakeholders, but also with KDOT executive management personnel. Ultimately, KDOT chose to go with a business model that required travelers to purchase a subscription to access general Internet content. Free access was provided to a traveler information portal that contained all the traveler safety, service, and tourism information appropriate to KDOT's role as a traveler information provider. Subscription not only offered a method to recoup costs, but also demarked the line between KDOT-provided and endorsed content and content obtained through the purchase of access rights from a private company. Several issues factored into the decision, but liability concerns did influence the ultimate decision in favor of a subscription-based model.
- The sustainability of the business model was considered a risk of the vendor and did not influence the development of the RFP or the evaluation of the proposals received in response to the RFP.
- Installation of the equipment into state-owned facilities grew in importance as the project progressed. The selected vendor used a subcontractor for installation of equipment. Coordination between the vendor, the subcontractor, and various KDOT offices was a major challenge during installation. See the comments in Lessons Learned below for further details.

## **CONCURRENT INITIATIVES**

At the time the KDOT effort began, two other states were known to have deployed systems similar in concept and scope as the system envisioned for Kansas. Those states included Iowa and Texas. However, several other states were in various stages of procurement, similar to KDOT.

As mentioned above, Iowa contracted with I-Spot Networks to provide Wi-Fi connectivity at all Iowa rest stops. The system allowed travelers to view a traveler information portal and access the Internet for free after providing registration information. Revenue from advertising was projected to sustain and provide profit. However, advertising revenue alone was incapable of sustaining the program. In 2006, Iowa had to revisit the program and make alterations in order to continue service.

Since the first business model proved unsustainable, to mitigate future risk the Iowa DOT decided to purchase all of the equipment and to contract directly with Internet service providers for wireless access. Iowa has contracted with another provider, Zoom, for technical support, software development, and kiosk installation.

The Texas Department of Transportation contracted with a vendor called Coach Connect, which had previously established a successful business practice delivering Wi-Fi service to recreational vehicle parks across the country. The business model for Coach Connect was to provide the traveler information portal free of charge, but to require a reasonable access fee to obtain unrestricted Internet access. Advertising was also part of the business plan.

## **DEVELOPMENT OF THE WI-FI SERVICE NETWORK IN KANSAS**

### **KDOT Procurement Methodology**

The RFP was developed and released in the winter of 2005/2006. The RFP was developed with input from the steering committee (as described above), KDOT executive staff, and the project team, which consisted of four individuals. The project team proved vital in keeping the project moving forward and on task. The individuals and their affiliations were as follows:

- Stan Young, Bureau of Materials and Research
- Jaci Vogel, Division of Operations
- Mark Clements, Fiscal Services
- Barb Blue, Advanced Traveler Information Systems Coordinator

The basic tenets of the RFP issued in the winter of 2005/2006 included the following:

- Outfit a minimum of four rest areas in the initial year as a pilot study. At each rest area, the public would be able to log into the Wi-Fi service to access traveler information such as weather, road closure, and construction/detour information free of charge. The public also had the option of accessing the Internet for other services, such as web browsing and email. However, the provider could charge a subscription fee (though this was not required). Advertising would also be an acceptable method for revenue generation.
- If KDOT deemed the one-year pilot program successful, Wi-Fi service could be extended to all KDOT rest areas. The contract could be renewed for an additional four years. Vendors were also asked to provide Internet connectivity at rest areas for state business purposes (KDOT, Kansas Highway Patrol, and the Kansas Department of Commerce, Division of Travel and Tourism), preferably at no charge.
- The vendors were asked to submit proposals with and without advertising revenue and with and without a profit sharing scheme.
- Executive staff agreed with the approach and added that any methodology that obtained the services at no cost while simultaneously limiting risk and liability to KDOT would be preferred.
- Awarding of the contract and initiation of the pilot study was targeted for January 2006. The steering committee would continue to monitor the project through the pilot phase and into full deployment.

The RFP was issued in the fall 2005, with a closing date of October 31, 2005. The evaluation and negotiation process lasted over the winter months, and a final contract was signed on February 15, 2006. The contract was awarded to Coach Connect, the same company that was under contract with the Texas Department of Transportation.

Coach Connect proposed an approach in which the basic Wi-Fi system would be deployed and operated at no cost to the state. A traveler information portal would be offered free of charge, and subscriptions could be purchased for a nominal fee for full access, within the constraints set forth within the RFP for duration of service at any single rest stop. The Wi-Fi could also be used free of charge for state purposes.

### **Development of a Web Portal for Traveler Information**

KDOT began working on the traveler information web portal in April 2006. The first step was to research what other states with a similar project model (primarily Iowa and Texas) had done. From that research, a proposed layout for the portal and its content was developed.

KDOT representatives met with the Kansas Department of Commerce, Travel and Tourism Division, on April 24, 2006, to discuss goals and needs, desired and available content for the portal, and promotional ideas for the project. Since the portal would provide travel information not only for Kansas, but for all adjacent states as well, these states were contacted to inform them about the Kansas Wi-Fi project and to invite them to provide information to be included in the portal. All states agreed to share information.

Steering committee members and/or their representatives assisted with the development and approval of the portal. An individual from the KDOT Scenic Byways Program was also added to the committee to provide input regarding scenic byways. Additional KDOT personnel assisted by providing the maps and photos required for the portal.

The initial meeting to discuss the portal with the expanded steering committee was convened on May 25, 2006. A summary that included the research regarding portal content and layout in other states, the meeting with tourism representatives, and the results of discussions with adjacent states was presented. A basic concept for the portal, including the desired content, was discussed, and the results were submitted to Coach Connect for development of the first version of the portal.

When Coach Connect developed the initial draft of the portal, the steering committee met to review and critique it, and many changes were proposed. This was the beginning of a series of changes in not only content, but also map presentation, menu bar options, links and their functions, and general layout. After several versions and review meetings, the portal was approved by KDOT in March 2007.

### **Pilot Test Deployment**

The initial-year pilot test was targeted for the following four rest areas:

1. One of the following off-interstate rest areas:
  - Greenwood County rest stop on US-400 (selected by the vendor)
  - Yates Center rest stop on US-75
  - Sabetha rest stop on US-36
2. One of the following high-traffic rest areas:
  - McPherson rest stop off of I-135
  - Williamsburg rest stop on I-35 (selected by the vendor)
3. Kansas Visitor Information Center: Goodland rest area on I-70 near Colorado
4. Paxico rest area off I-70 west of Topeka – nearest rest area to KDOT headquarters

Pilot phase deployment included installing equipment at each of the rest areas noted above. Coach Connect subcontracted the equipment installation. At the time of the RFP development and the discussion of critical issues, installation of equipment was not considered a significant risk and did not provoke significant discussion. However, due to the distributed nature of the rest area administration within the KDOT, a wide variety of structures at rest areas, a separate installation contractor, and the unfamiliarity between all parties, deploying the equipment proved more difficult and took much longer than expected.

The initial concerns of KDOT were installation procedures to ensure proper routing of cables, installation and sealing of roof and sidewall intrusions, and general quality issues. Before the equipment was installed, KDOT requested installation plans. After receiving written guidelines for sample installations and photographs of previous installations, KDOT field personnel had concerns about the installation

procedure and its relationship to KDOT structures. After these concerns were resolved, the contractor, in order to minimize cost, planned to install equipment at all four locations on successive days in a single week. The installation crew was traveling in from out of state, and such a scenario would minimize installation costs. A KDOT representative was needed at all locations at the proper time to approve the installation plan and provide access to utility closets. Ultimately, equipment was installed in all locations, but it was delayed by about three months. Although it took longer than expected, the installations were for the most part successful. The only unresolved issue was at the Kansas Visitor Center in Goodland. Equipment was installed in only one facility rather than at both the eastbound and westbound facilities.

## **System Startup**

Once the portal was complete, the equipment was installed, inspected, and tested by the final week of April 2007. Wi-Fi service at the pilot locations was made available to the public on May 1, 2007. The service was deployed smoothly, and no problems have occurred up to the present time. Both KDOT and Coach Connect agreed the service would be started with a “soft” deployment approach, in that KDOT did not publicize the service at the time it was released, in order to allow time to ensure that the service was working satisfactorily before promotion efforts began. Ultimately, users will have to pay a subscription for unlimited Internet access; however, the service has initially been made available without charge. Subscriptions are planned to begin sometime in June 2007. While notification signs for the pilot locations were installed by May 25, 2007, additional promotion will begin in June 2007, around the time subscriptions begin.

## **LESSONS LEARNED**

This public-private partnership is not the first such venture for KDOT, but such relationships are not the norm. In retrospect, KDOT’s approach proved workable, but several lessons were learned along the way. The positive aspects of KDOT’s approach that should be considered for similar initiatives include the following:

- Build internal consensus of the objective, scope, and proposed benefits.
- Listen carefully to all stakeholders concerns, particularly regarding risks and potential pitfalls.
- Develop strategies to mitigate project risks.
- Keep representation broad on the procurement team.
- Provide open and frequent communication to the steering committee, stakeholders, and agency executive staff.
- Evaluate the business plan of the vendor, as well as the vendor’s proposal.
- A project champion and cohesive project team are required.

Some of the oversights and lessons learned include the following:

- Installation can be more complicated than expected. Investigate and plan well in advance. Set expectations both for agency personnel and contractor personnel. Consider including guidelines in the RFP.
- With many stakeholders, portal development will take time. Allow adequate time for communication with not only the stakeholders, but also the contractor and the subcontractors to execute developmental changes. (A minimum of six months for portal development and final approval is recommended.) Develop a plan, timetable, and methods for continuously updating the portal.
- The challenges in web portal development were as follows:

- Map views and resolutions: The greatest challenge was selecting maps that provided enough detail to be helpful and not so much detail that they were difficult to read, especially for the resolution necessary for the portal space. After much trial and error, the committee determined that the best solution was to give users the ability to select a larger map view.
  - Menu bar: Determining the highest priorities for the menu bar was challenging. The goal was to keep the portal as user friendly as possible, without burying information under several “drill-down” layers.
  - Negotiating differing views and priorities with the various stakeholders is crucial.
  - Accommodate information, such as the Amber Alert system, that is not active all the time. The goal was to draw attention to the information when active. Amber Alert information is provided as crawl information at the bottom of the portal screen.
- Develop a deployment plan so that portal development and hardware deployment can occur simultaneously and be completed about the same time. At the suggestion of the contractor, Kansas waited for the portal to be completed before proceeding with hardware deployment, which was not necessary.
  - Without financial obligations, partnerships must rely heavily on trust and communication. The incentive for the private partner must be sufficient to keep the partner’s interest throughout the entire project.
  - When disruptions in project leadership occur, communicate the change in responsibilities clearly to stakeholders. A project team member left KDOT in November 2006. This disruption caused additional delay during pilot phase installation. Another team member stepped up to lead the project and keep it moving forward and on target until the system became operational in 2007.

Although the Kansas project remains on track, the overall success of the project is still in doubt. The pilot system was activated in May 2007, and the system is currently being monitored to assess whether all of the potential risks have been successfully mitigated.