CITIZEN PARTICIPATION IN LOUISVILLE AIRPORT SITE SELECTION

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The Louisville and Jefferson County Air Board formed a citizens' advisory committee in October 1971. A major contribution of the interaction of these two groups was the formation of a site evaluation committee whose responsibility was to choose the best of several alternative sites for the location of a new airport serving the Louisville region. This paper discusses the way in which the evaluation committee used a certain methodology in the decision-making process. The committee first determined the criteria by which the relative attractiveness of potential airport sites could be evaluated. A criteria utility vector was established by ranking and rating techniques. An effectiveness value was assigned to each alternative for each criterion. Total site utility was obtained by multiplying the effectiveness values by the criteria weights. The principal conclusion reached is that a group of interested and informed citizens and experts can successfully apply a somewhat sophisticated evaluation technique to community decision making. The technique allowed for the consideration of community social and economic values, environmental concerns, and technical data that the committee thought were relevant.

•SOUND planning practice requires effective citizen participation at all levels of the planning process and extraordinary involvement in community decision making of those citizens affected by such planning. A prerequisite for funding major projects at either the federal or state level is development of a statement of community values and certification that the project is in accord with the goals and objectives of the citizens and part of the rational program of community development.

Several years ago, the necessity of planning for improved aviation facilities to serve the Louisville region became apparent to the Louisville and Jefferson County Air Board. It was anticipated that improvements could consist of major expansion of the existing airport, Standiford Field, or construction of an entirely new airport. It was equally apparent that any decisions about aviation facilities must provide for adequate and effective community involvement.

The approach in Louisville was to identify a group of citizens who were interested in development of their community and, perhaps, had some influence with other members of the community at large. It was hoped that such a group would be geographically, socially, and economically representative of those citizens affected in some way by any proposed airport project. The result of these early efforts was formation of a citizens' advisory committee (CAC) representing 11 Louisville area counties in Kentucky and Indiana. Subsequent expansion of this committee resulted because of the recommendations of current membership and an open-membership policy. Any resident of the Louisville region who wanted to participate in aviation facilities planning was (and still is) granted membership in the CAC. Extensive documentation of the formation of the CAC and its planning activities has been published previously (1, 2).

These planning activities reached a critical stage during the summer of 1972. The air board staff was able to reduce 28 potential sites to 9 sites considered the most feasible and advantageous. The air board, in conjunction with the CAC, assembled a site evaluation committee (SEC) to select the best of nine proposed sites. The activities of the SEC were divided into two parts: In phase 1 (October 1972), four of the

nine sites were selected for more detailed analysis (and the expansion of Standiford Field was analyzed); in phase 2 (August 1973), the best site was selected.

This paper presents the methodology and procedures used by the SEC in selecting the best site for a new airport to serve the Louisville region.

SITE EVALUATION COMMITTEE

Background and Purpose

The initial meeting of the SEC was held on October 17 to 19, 1972. At that time, the air board had devoted 3½ years of preliminary planning to an examination of future air transportation needs in the Louisville region. It was evident that other factors added several dimensions to the problem of air travel needs. These included

1. The economic importance of rebuilding Louisville as a major transportation center,
2. The related importance of developing an adequate buffer zone (including compatible and coordinated industrial and commercial facilities) to provide environmental protection, and
3. The importance of accommodating projected metropolitan growth in the area near the airport.

Efforts of the Louisville and Jefferson County Air Board continue to reflect these concerns. A built-in assumption of the airport project has been that expanding and updating air transportation facilities will be a significant economic decision for both the specific region and the state. Standiford Field currently enplanes approximately 1 million passengers and handles about 130,000 aircraft operations annually. The air board staff used Federal Aviation Administration (FAA) forecasts, the history of activities at Standiford Field, and regional economic trends to forecast aviation facility needs for the Louisville region. Much of this work has been documented in a report on Standiford Field. The forecasts anticipated that by 1984 annual enplanements will total about 2.5 million, and aircraft operations about 218,000. In 2000, 6.7 million enplanements and 429,000 operations are expected.

The forecasts also indicate that, theoretically, Standiford Field will become saturated with air traffic in the late 1970s; by the early 1980s, the level of service provided to the air traveler by the present facility will be intolerably poor. Ground access and many other facilities at Standiford Field soon will be unable to meet the demand. Expansion of Standiford Field to meet demands until 1990 has been estimated at over 300 million in 1970 constant dollars, over and above the cost of detrimental effects on the community due to expansion of the field and intensified aviation activity. At its present location, the airport has little, if any, room for growth, and has many incompatible neighboring land uses.

Several additional elements of the planning process have been brought into sharp focus by growing national attention, such as the concern that all facilities refrain from any unnecessary environmental damage. A new airport facility must be designed as a constructive element to offset and control some of the sprawl associated with growing metropolitan areas. Uncertainties about the energy crisis and its impact on air transport must also be addressed. Most assuredly, these and other factors will continue to provoke considerable discussion and have significant impact on the deliberations and decision-making functions of both the air board and the CAC.

In 1972, the planning process had advanced to the crucial phase of selecting a best alternative site. This selection had to be based on the best available data about the region's and state's projected needs: expand Standiford Field, build a new airport, or, perhaps, do nothing. The impact of this decision will be far-reaching.

Organization

The SEC was made up of 26 members in phase 1 and 24 members in phase 2. The two general groups of membership included

1. Members of the CAC who, as a group, had kept an open line of communication with the air board on matters concerning air facilities before the phase 1 meeting. The CAC elected 15 of its members to serve on the SEC.
2. Nationally recognized airport and planning experts. Eleven representatives participated in phase 1 activities, and 9 in phase 2. These were persons of stature and prominence, recognized leaders in their respective fields.

Thus, the SEC represented the merger of two seemingly diverse groups of individuals:

1. Area citizens who knew about air facilities planning and its more general ramifications and who were vitally interested in and concerned about the social, economic, and environmental impact of the facility on the region, its land, and its inhabitants; and
2. Professional airport managers and planners who were aware of the socioenvironmental impact of their decisions in general and who were vitally concerned about safety, efficiency, and a plethora of technical details relative to the planning, design, and operation of a major air facility.

The two groups were unified by the common goal of selecting the best possible site. They complemented each other with their special concerns and contributed to their mutual effectiveness through discussion and the frank interchange of ideas.

Investigation of Potential Sites

Twenty-eight potential sites were investigated during the planning period before the phase 1 meeting. The Urban Studies Center of the University of Louisville was contracted to apply the techniques of environmental analysis to the Louisville region. The analysis suggested 3 of the sites; the air board proposed the other 25. The processes described later in this paper were used to reduce these to nine sites considered feasible and advantageous. Six of these nine sites were located to the east and northeast of Louisville, one south of Louisville, and two north of Louisville in Indiana. These locations are shown in Figure 1.

The functions of the SEC were to reduce the nine sites to three at the phase 1 meeting in October 1972 and to select the best site at the phase 2 meeting in late August 1973.

EVALUATION COMMITTEE ACTIVITIES

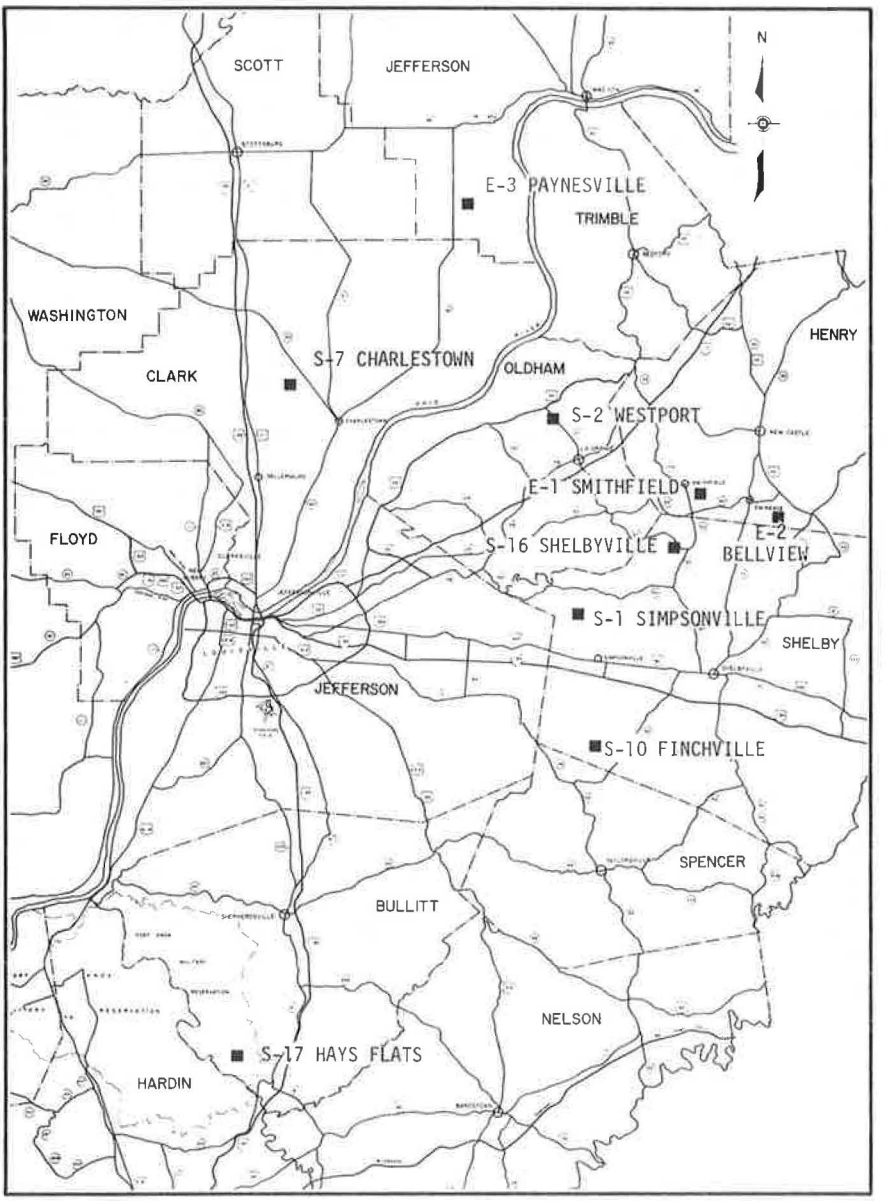
Schedule

The phase 1 meeting of the SEC was held on October 17 to 19, 1972. On the evening of October 17, questions were answered about the evaluation process and the methodology to be used. The committee was instructed to reduce the nine possible sites to the best three, and the goals and objectives of the committee were clarified.

The phase 2 meeting of the SEC was held on August 28 to 31, 1973. The schedule of activities lasted 1 full day longer than the phase 1 meeting. As before, on the first evening, questions were answered, and the committee was instructed to select the best among the alternatives proposed by the air board:

1. To construct new airport facilities at one of the four rural sites (Smithfield, Shelbyville, Bellview, and Finchville) selected in phase 1,
2. To expand Standiford Field, or
3. To do nothing.

Figure 1. Location of potential airport sites.



Although the schedule for phase 2 was more extensive than for phase 1, the following major steps were common to both phases:

1. Review and modification of the criteria deemed important in airport site evaluation.
2. Ranking and rating of the criteria to establish relative importance through assignment of a numerical weight to each criterion.
3. Critical review of each alternative site, including a field inspection trip.
4. Evaluation of each alternative site to determine how well a particular criterion might be satisfied by that alternative. This evaluation was performed for all alternatives, one criterion at a time.

The activities for each phase follow.

Phase 1

After the initial orientation session in phase 1, the committee was presented with a suggested list of 15 criteria. These were the criteria used by the air board to reduce the 28 potential sites to 9 feasible sites. The committee discussed, restructured, and altered the criteria until a final set of 10 was developed. At the time the criteria were established, the members had not been exposed to detailed information about any site. This enabled establishment of an objective criteria set that, theoretically, could be applied to any proposed airport site.

The committee then undertook the ranking and rating exercises to establish each criterion's relative weight or criteria utility vector. The committee, after reviewing the results, was given the option to perform a second iteration, but declined to do so.

Site maps were distributed to the committee members, and general discussions relative to each site were initiated. Each member viewed the nine sites during a series of helicopter flights. Although the field trips did not provide the type of technical data required to evaluate the sites objectively, they did provide a nucleus of information for all committee members regardless of their backgrounds. Moreover, the site visits stimulated a great deal of discussion and interaction among the members and allowed those members who did not normally work with maps and technical data to become familiar and more comfortable with the technical material used in the evaluation process.

After the field trips, many ground-level slides were shown of the nine sites. The members were able to recognize topographic features, existing site development, and other factors such as vegetative cover and erosion problems.

The air board staff set up a series of displays graphically depicting available data relative to the established set of criteria. Notebooks containing other types of data were prepared and distributed to the members. While viewing the displays and leafing through the notebooks, the members asked many questions and engaged in continued discussion. It was this exchange of information and ideas that built the basis for each individual's later evaluation of the nine sites.

The evaluation process was conducted in steps during which each criterion was presented with related data for all sites so that all nine sites could be evaluated relative to that criterion. This provided consistency of evaluation for the nine sites and reduced the possibility of members confusing the issues of one criterion with another. At the conclusion of the evaluation process, the committee was satisfied with its efforts and decided that a second iteration would not be necessary.

Phase 2

In phase 2, the committee began by reviewing the 10 criteria. Two were eliminated, and a new one added. Then, the ranking and rating techniques were applied, and the criteria utility vector was established.

All of the procedures in phase 1 apply equally to phase 2. An added feature was a set of three-dimensional scale models, one for each site. Each model was 4 ft^2 (0.4 m^2) and reflected real-world conditions on plots of about 211,000 acres (85 000 hm^2) at a scale of 1 in. (2.5 cm) = 2,000 ft (610 m). Inserts showing the 8,000-acre (3200-hm^2) airport site at various stages of development were available for each model.

Another development concerned the do-nothing alternative. The committee decided they could not recommend this alternative because growth in the Louisville region is inevitable as is associated growth in the need for air transportation services. Thus, although six alternatives were presented to the committee, only five were evaluated.

For both phases, arrangements for meeting rooms and hotel accommodations were made in proximate locations. This created an environment in which members could interact both socially and formally. Losses due to travel time and other functions were kept to a minimum.

SITE EVALUATION

Relevant Criteria

Initially, the significant factors in choosing a site for a major airport were determined. These factors may be goals, such as preservation of the natural environment; site requirements, such as air space and soil conditions; accessory features, such as availability of ground access; and socioeconomic impact factors, such as the needs of people displaced by the airport. All of the above and other similar factors were collectively termed criteria.

Although one site will satisfy a given criterion to a greater extent than another and vice versa, a given criterion may be more, equally, or less important than another in considering an air facilities plan. Thus, it is not enough merely to determine what constitutes an appropriate set of criteria; a weighted hierarchy of that set is equally necessary.

The first task of the SEC was to establish a weighted set of site evaluation criteria. The procedure is as follows:

1. Professional planners establish a tentative set of criteria,
2. The criteria evaluation group discusses and modifies the set until a new criteria set agreeable to all participants emerges,
3. The evaluation group weights the criteria by the ranking and rating methods (described later),
4. The evaluation group discusses the results of the weighting exercise, and
5. Each group member is given the opportunity to reevaluate the initial weighting in a second iteration.

The SEC followed this procedure. The initial set of 15 criteria had been used by the air board in reducing the 28 sites studied to the 9 considered by the SEC. These 15 criteria were

1. Airspace;
2. Distance to airport users;
3. Economic impact;
4. Financial impact;
5. Governmental and institutional considerations;
6. Highway access availability;
7. Land cost;
8. Urban transit availability;
9. Natural environment;
10. Noise impact and approach obstructions;
11. Rail access availability;

12. Relocation impact;
13. Soil, topography, and drainage;
14. Water and sewage utilities; and
15. Other utilities.

Using these as a starting point, the committee reviewed, modified, and restructured the set and, as a result, agreed to the following criteria in phase 1:

1. Airspace,
2. Utilities,
3. Engineering and obstructions,
4. Natural environment,
5. Relocation impact (human factors),
6. Noise and other human environmental impacts,
7. Ground access availability,
8. Total project cost,
9. Economic impact, and
10. Governmental and institutional considerations.

At the first meeting of the phase 2 SEC, members were given the 10 criteria as developed and used in phase 1. The members were instructed to consider these criteria and modify them, if necessary.

During the discussions on determining the criteria, the committee decided that, since there were no major engineering problems or any similar difficulties relating to utilities, these two items (formerly criteria in the phase 1 evaluation) should be considered only from the standpoint of costs and should be included in the criterion of total project cost.

The committee also had difficulty in defining governmental and institutional considerations as to the jurisdictional, attitudinal, and financial aspects. It was decided, then, that financial feasibility be considered as a separate criterion. Thus, two criteria were eliminated and one added.

These criteria are self-explanatory to a certain extent, and thus will be discussed later in the paper. In any program of this kind, the exact meaning of each criterion is specified by participant discussions.

Ranking the Criteria

The ranking technique is essentially a classification of the criteria into quantitative categories. Complete discrimination in rank is asked of each judge in that only one criterion is to be placed in each category. The technique assumes the existence of equal intervals of importance between criteria.

A ranking form was distributed, and each judge was asked to place a raw rank in the space provided beside each criterion on the list. The most important criterion was to receive a raw rank of 1; the second most important a raw rank of 2. This continued through the list of n criteria. So that the most important criterion would have the highest weight, the raw rankings had to be converted before the weights associated with each criterion were calculated. Thus, a converted rank of n - 1 was assigned to the criterion with a raw rank of 1; a converted rank of n - 2 to the criterion with a raw rank of 2, and so on.

A composite rank R_j was determined for each criterion by summing the converted ranks of the judges:

$$R_j = \sum_{i=1}^{m} R_{ij} \quad j = 1, 2, \ldots, n \tag{1}$$

where

R_j = composite rank of criterion j,
R_{ij} = converted rank of criterion j established by judge i,
n = number of criteria, and
m = number of judges.

The composite ranks thus determined were normalized in the following manner:

$$u_j = \frac{R_j}{\sum_{j=1}^{n} R_j} \tag{2}$$

where u_j is the composite weight or utility value associated with the j th criterion. Of course, the summation of the u_j from j = 1 to n must equal 1.

Rating the Criteria

The rating scale technique is probably the most popular of the procedures used for collecting individual judgments. A numerical rating scale was used, but the descriptors normally associated with integer values on the scale were not used. A set of descriptors that would not bias the judges could not be determined.

Generally, the list of criteria to be weighted is placed in columns down the right side of the page. A rating scale marked in units continuously from 0 to 100 (bottom to top) is placed at the left side. A rating of 0 indicates there is no value associated with a given criterion; a rating of 100 is the highest value. Any value in the unbroken continuum may be assigned to any criterion. The judge assigns a rating by simply drawing a line from the criterion to an appropriate point on the rating scale.

The data are then treated in much the same way as the ranking data. However, there is no need to convert the rating data because the highest valued criterion receives the highest rating. A composite rating V_j is determined for each criterion by summing the ratings of the judges:

$$V_j = \sum_{i=1}^{m} V_{ij} \quad j = 1, 2, \ldots, n \tag{3}$$

where each term is the same as in the ranking techniques. The composite ratings or utility values associated with each criterion are determined by normalizing:

$$u_j = \frac{V_j}{\sum_{j=1}^{n} V_j} \tag{4}$$

Criteria Utility Vector

The rating and ranking techniques resulted in the generation of two utility vectors. So that the best features of both techniques were combined, the two vectors were averaged to produce a third vector, the average utility vector (Table 1). The average utility

vector was the only one used in subsequent calculations of total site utility.

After the utility values had been calculated and checked, the committee reviewed and discussed the results. In both phases 1 and 2, the members were satisfied with the results and decided that no additional iteration would be necessary.

Discussion of Factor Ranking

Environmental factors ranked high in the committee's deliberations in both phases. Noise and other human environmental impacts ranked first and second in phases 1 and 2 respectively; natural environment ranked third in both phases. Ground access moved from second to first in order of importance. Thus, accessibility and environmental concerns are the most important factors relative to airport site location.

Project cost ranked ninth in both phases. The relative importance of these criteria reflects a nationwide trend in the attitude toward large public works projects that considers accessibility and environmental feasibility more important than cost. This is because economically infeasible projects probably will not be implemented but environmentally infeasible projects might.

Information on Criteria

After the criteria had been weighted, each member visited the location and saw slides of each site. During this period, the air board staff and consultants prepared displays, information, and data for each site relative to airspace, utilities, engineering and obstructions, natural environment, relocation impact (human factors), noise and other human environmental impacts, ground access availability, total project cost, economic impact, governmental and institutional considerations, and financial feasibility. Information on these criteria follows:

1. The airspace analysis was conducted by the FAA. Data included distance to nearby airfields, adverse effects on nearby airfields (e.g., severe restriction or elimination of types of approaches to various runways), and evaluation of the site based on airspace utilization.
2. Data on utilities included distance to the nearest source of utility services and cost estimates for extensions and construction of sewage treatment facilities.
3. Engineering data consisted of a description of topography, soil conditions, and depth to and character of bedrock and a brief description of drainage features and problems in the vicinity. Obstructions were mainly radio and TV towers penetrating the airspace but also included such items as power lines that cross or are close to a site. The cost of removing these obstructions was also included.
4. Information about the natural environment included the physiographic subregion, an estimate of the ability of the area to support various amounts of development, natural environmental hazards, and any natural resource issues in the area.
5. Data about relocation impact (human factors) consisted of an estimate of the number of people, dwelling units, businesses, schools, and churches that would have to be relocated at each proposed site.
6. Reports on noise and other human environmental impacts estimated the number of people, dwelling units, businesses, schools, and churches located within various composite noise ratio (CNR) contours at each site. The CNR attempts to analytically evaluate the extent to which noise is objectionable and includes such factors as decibel range, frequency, and time of day for various noises expected at the airport. Supposedly, people cannot tolerate CNR values above 115 and find any value over 100 somewhat objectionable.
7. Ground access information was provided about distance to the airport, highway access, rail access, and rail rapid transit. Current and 1995 estimates of distance and travel time were given from the site to downtown Louisville and to the 1972 center of user activity. The distance to major highways, the calculated volume-to-capacity

ratio of those routes, and any currently proposed improvements in the vicinity were also given. The distance to, condition of, and present volume on nearby railroads and on nearby rail track systems acceptable for public transit use were presented.

8. The estimated construction cost in 1972 constant dollars was given for the various components at each site, such as land acquisition, grading and drainage, water and sewage, pavement, and terminal structures.

9. For each county in which an airport site was located, economic impact was based on population, wholesale and retail sales, per capita income, labor supply, and property taxes lost because of the airport.

10. Data on governmental and institutional considerations included the number of cities, counties, schools, and school districts either wholly or partly located within various CNR contours in the vicinity of the site. The analysis of public and news media reaction to each of the proposed sites consisted of the percentages of pro, con, and undecided viewpoints of both newspaper readers and CAC participants living in the affected counties.

11. Financial feasibility data included a detailed cash flow analysis showing anticipated revenues and expenditures, bonded indebtedness, and cash on hand for each year of the 20-year planning period.

Effectiveness Values

When the effectiveness values were determined, committee members considered one criterion at a time. For example, in working with ground access, each member assigned an effectiveness value to each of the sites based on how well he or she thought each site would fare relative to that criterion. A value of 1.0 implied that all aspects of that criterion could be adequately and efficiently provided for, 0.0 implied an impossible provision, and 0.5 implied that the site held no particular advantage or disadvantage relative to the criterion. The average effectiveness value is represented by e_{ij} ($i = 1, 2, \ldots, s$ and $j = 1, 2, \ldots, n$), where e_{ij} is the average effectiveness value assigned to the i th site for the j th criterion by the judges. In phase 1, there were 26 judges, 9 sites ($s = 9$), and 10 criteria ($n = 10$). In phase 2, there were 24 judges, 5 sites ($s = 5$), and 9 criteria ($n = 9$). In both phases, the total individual effectiveness values for a particular site-criterion combination were averaged to produce the average effectiveness values.

The average effectiveness values may be arrayed in an effectiveness matrix of s rows (number of sites) by n columns (number of criteria). In generalized vector notation, the effectiveness matrix may be represented by [E]. The values of the effectiveness matrix for sites in phase 2 are given in Table 2.

Site Utility Vector

The total effectiveness of a site is determined by multiplying the values of effectiveness matrix by those of the criteria utility vector. The product is a site utility vector in which each entry represents the utility of an individual site or, as stated above, the total effectiveness of a site.

The product mentioned above is actually the summation of the products formed by multiplying the average effectiveness with which a site satisfies a criterion by the utility value of that criterion. This may be stated as

$$U_i = \sum_{j=1}^{n} e_{ij} u_j \quad i = 1, 2, \ldots, s \tag{5}$$

where

U_i = total utility of site i,
e_{ij} = average effectiveness of site i in satisfying criterion j, and
u_j = utility value of criterion j.

Because the summation of u_j over j must identically equal 1, and the maximum value for e_{ij} equals 1, then the maximum value for any U_j is also equal to 1. Thus, a perfect site would have a value of 1, and a totally worthless site would have a value of 0. Obviously, most sites will have utility values >0 and <1.0, probably in a range from 0.3 to 0.7. The calculation of U_i was completed for each site, and the site utility values were compared.

Equation 5 may be stated in a generalized vector notation as follows:

$$[E]\,[u] = [U] \tag{6}$$

where

$$[u] = (M_1,\ M_2,\ \ldots,\ M_j,\ \ldots,\ u_n)^T \tag{7}$$

is a column vector whose components represent the utility values associated with each of the n criteria, and

$$[U] = (U_1,\ U_2,\ \ldots,\ U_i,\ \ldots,\ U_s)^T \tag{8}$$

is a column vector whose components represent the total utility associated with each of the s sites, and [E] is the s × n effectiveness matrix defined previously.

The total site utility of each site for phases 1 and 2 and the overall rank of each site's effectiveness value are given in Table 3.

COMMITTEE RECOMMENDATIONS

Phase 1

The committee members considered several factors when they reviewed the results of the intensive 2-day evaluation:

1. Five sites were ranked fairly close together at the top of the list (Table 3);
2. The fifth-ranked site, Simpsonville, was not in an environmentally acceptable area;
3. The first and third-ranked sites, Smithfield and Shelbyville, were in such close geographical proximity that they overlapped; and
4. The three top-ranked sites were in the same general area.

After these factors were carefully reviewed, the committee recommended that the air board carry out detailed studies of the four top-ranked sites, instead of three as was the original intention, because of the almost identical locations of the first and third-ranked sites.

The air board staff and consultants studied these four sites and the expansion of Standiford Field for the next 10 months in preparation for the phase 2 meeting.

Table 1. Criteria utility vector values.

Phase 1				Phase 2			
Evaluation Criteria	Ranking	Rating	Average	Evaluation Criteria	Ranking	Rating	Average
Airspace	0.1110	0.1282	0.1196	Airspace	0.0949	0.0958	0.0954
Utilities	0.0380	0.0171	0.0276	Economic impact	0.1250	0.1235	0.1242
Engineering obstructions	0.0887	0.0897	0.0892	Financial feasibility	0.0926	0.1023	0.0975
Natural environment	0.1218	0.1256	0.1237	Governmental and institutional considerations	0.1042	0.1074	0.1058
Relocation impact	0.1171	0.1231	0.1201	Ground access	0.1400	0.1350	0.1375
Noise and other impacts	0.1332	0.1462	0.1397	Natural environment	0.1296	0.1265	0.1280
Ground access	0.1203	0.1274	0.1238	Noise and other impacts	0.1493	0.1233	0.1363
Total cost	0.0848	0.0786	0.0817	Relocation impacts	0.1123	0.1145	0.1134
Economic impact	0.0923	0.0855	0.0889	Total cost	0.0521	0.0717	0.0619
Governmental and institutional considerations	0.0928	0.0786	0.0857				

Table 2. Effectiveness values for sites in phase 2.

	Criterion								
Sites	Airspace	Economic Impact	Financial Feasibility	Governmental and Institutional Considerations	Ground Access	Natural Environment	Noise and Other Impacts	Relocation Impacts	Tota Cost
Finchville	0.4460	0.6440	0.6616	0.5700	0.6612	0.6252	0.7552	0.6560	0.71
Shelbyville	0.6120	0.6832	0.6052	0.4896	0.6116	0.4572	0.7280	0.6612	0.64
Smithfield	0.6672	0.6488	0.5880	0.4600	0.5092	0.2828	0.6316	0.5656	0.61
Bellview	0.7696	0.6284	0.5940	0.4140	0.3740	0.5860	0.5900	0.6612	0.59
Standiford	0.7696	0.5048	0.3740	0.5980	0.8296	0.8396	0.1948	0.2240	0.37

Table 3. Site utility vector values.

Phase	Site	Overall Utility	Rank
1	Simpsonville	0.5541	5
	Westport	0.4254	6
	Charlestown	0.3803	8
	Finchville	0.5608	4
	Shelbyville	0.5740	3
	Hays Flats	0.3755	9
	Smithfield	0.5870	1
	Bellview	0.5777	2
	Paynesville	0.3956	7
2	Finchville	0.6402	1
	Shelbyville	0.6411	2
	Smithfield	0.5447	4
	Bellview	0.5721	3
	Standiford Field expansion	0.5328	5

Phase 2

After the results were reviewed, the committee offered the following recommendations to the air board:

1. The best site for a proposed new airport facility is Finchville (Table 3);
2. The existing Standiford Field should be used to maximum capacity in providing air service to the region;
3. A regional authority, established by the Kentucky State Legislature, should assume control of the air facility;
4. The regional authority should seek acquisition or land banking of an alternate site by using appropriate state or federal resources;
5. The land required for the recommended Finchville site should be acquired but used as is until construction becomes necessary; and
6. If and when a new major airport becomes operational, all scheduled air carrier service should be conducted from there.

SUMMARY AND CONCLUSIONS

In the site evaluation and selection used by the Louisville and Jefferson County Air Board, members of the SEC drew up a set of criteria considered important to airport site location, weighted those criteria, and evaluated how well each site met the criteria. This enabled calculation of an overall site utility value that was the decision rule for site selection.

Several general conclusions may be drawn from the site evaluation methodology:

1. Active citizen involvement beginning in the early planning stages of any public project is indispensible to the planning process. Active citizen involvement not only is a requirement of legislative statute but also provides for interaction between planning agencies and citizens.
2. The evaluation methodology discussed is important in community decision making, primarily because of the reliable quantification of value judgments resulting from its use.
3. A committee of interested and informed citizens can reach a consensus on a delicate public issue by applying the evaluation methodology.

The data were subjected to several statistical analyses (2, 3), and almost every statistical test was affirmative in that it served to confirm the ability of the committee members to perform the many tasks demanded by the evaluation methodology.

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DISCUSSION

Joan Allen

Having served on the CAC in Louisville, Kentucky, from 1971 to 1973, I submit the following observations regarding the effectiveness of the methodology discussed in the paper. An evaluation of the process for using citizen input and an analysis of the inadequacies in this process are also presented.

In early 1971, the CAC was initially formed specifically for working with the air board to determine the need for a new airport serving the metropolitan Louisville area and to select a site when this need was established. Membership in the CAC was open and so stated at every meeting, and eventually membership was made up of 300 active participants from a regional population of nearly 1.5 million.

Since the members came from throughout the Louisville-Jefferson County area, few knew each other or were aware of the variety of talents available in the group. Thus, when formal organization of the group began, there was not much chance for meaningful elections. Therefore, several names were offered by the air board, and the CAC generally agreed to support the leadership of these people.

The task force formed under the CAC began the educational phase of the project. Although each task force was free to operate on its own and to use independent sources in the educational process, much of the educational material came from the air board.

As the time approached to come to a decision on the airport, the CAC elected 15 members and 11 aviation experts to serve on the SEC. The results of their interaction would be offered to the Kentucky State Legislature as an informed proposal indicating the direction that seemed most advisable for the benefit of the people of that area.

For 3 days, the SEC deliberated and were provided with ample opportunity for personal interaction and education. Since the qualifications of the citizens were in nonallied fields, each, of necessity, depended on the information presented by the air board. Each member undoubtedly retained his or her peculiar prejudice regarding the decision ahead and would presumably have expressed this prejudice in the decision-making process. However, as the paper describes, a set of objective criteria was established, and subsequent decisions were quantitatively measured against these criteria. This process reduced the opportunity for emotional decisions to override the rational approach. The unique quantitative features of this approach to citizen involvement set it apart from the traditional way in which citizens participate. The result was a decision that all participants felt they could support.

However, several problems arise concerning citizen participation. The extent of the actual authority of citizen groups as they interact with policy makers, urban specialists, and the political leaders of the community must be defined. This position was never adequately delineated in the Louisville Airport site selection methodology, and the failure to determine this could doom future citizen groups to engage in mere rhetorical proposals. For example, after the SEC had reached its final decision, the Kentucky State Legislature accepted and then quietly tabled the proposal. A political and financial power group apparently had effectively blocked the decisions and the work of the CAC. As a result, 2 years of citizen participation proved to be a somewhat frustrating experience.

Establishing the parameters of the role of the citizen in this type of participation leads to another problem in urban coinvolvement. There was a noticeable lack of minority-group representation in the CAC. Although the proportion of minority representation to the entire metropolitan area population was acceptable, this ratio appears too low when it is compared with that based on the Louisville population. All cities have finite financial resources, and diversion of funds to a particular project must be justifiable from a humanistic viewpoint as well as from a strict economics perspective. Since the majority of urban planning measures (i.e., urban renewal and public transit systems) most intimately affect the lives of those who can least affect any portion of these decisions, a mandate arises to include these groups in such planning.

I submit that, until the problem of the authority of the citizen group is dealt with, there will be little or no participation of minority urban people in open citizen partici-

pation. In Louisville, although open membership in the CAC was announced, it was not realized. A growing apathy to such media announcements occurs among minorities, since they feel little or no response to their needs can come from such membership involvement. Therefore, creative and genuine measures must be used to ensure their participation in such groups. If this is not accomplished, intense and increasing disenfranchisement will result and lead ultimately to further disruptive forces operating in cities where such planning without representation is occurring.

Another issue to be dealt with is the misuse of the citizen forum as a propagandizing platform for specific interest groups equipped with the expertise and finances to obtain a "group-think" result. It is extremely difficult for a group of citizens of diverse backgrounds and orientations to deal abstractly with a group of experts.

The Louisville CAC was made up of a group of relatively uninformed citizens and emerged with an almost unanimous agreement on an issue about which the group had had only superficial knowledge. The educational process for the CAC was handled by the air board, which had ample time, finances, expertise, and facilities available to them. In this situation, the potential manipulative capability of this type of forum becomes quite evident. Without adequate availability of counterpoint views obtained from independent sources, such citizen groups might be used to merely rubber-stamp prior determinations of any specific interest group.

Although the methodology in the paper proposes real advances in the evaluation and use of citizen input, it is vital that the problems discussed above be solved if the citizen's views and advice are, in reality, wanted and needed by the decision makers. If citizen forums are to be regarded as a placebo for the area populace, they have no real place in the structure of decision making.

AUTHORS' CLOSURE

Allen has made several significant points in her discussion:

1. The authority of citizen groups involved in public works processes should be better defined;
2. Minority groups must have a role in decision-making processes, particularly those affecting their lives, and their participation must be actively sought; and
3. Although the results of the CAC deliberations in the Louisville airport site selection process were supported by the participants, it became obvious to them that the participation process could be manipulated.

Citizen participation is often used in an advisory role to an entity (in this case, the Louisville airport authority) that may not, by law, delegate its decision-making responsibilities. It seems, therefore, that citizen groups will not be in a position to make final decisions on major public works projects. However, they can and should influence the decision process. The degree to which they will be able to influence decisions should be articulated at an early point in the process. However, it must also be recognized that little can be done to guarantee that influencing role; only the credibility of the decision-making body can ensure it.

We concur with Allen that minorities must be represented in decision processes, particularly those that will affect their lives. We also support the belief that extra effort must be made to solicit minority involvement. However, we can only caution that participation for which a struggle must continuously be exerted is often not genuine and, therefore, can be counterproductive.

Finally, it is our belief that the credibility and active interest of the decision-making body supporting the citizen participation process can ensure against its being manipulated. However, we also believe that the credibility and active interest of the community has an equal effect in discouraging manipulation. This is not to say that citizen participation processes cannot be manipulated. We contend that only by mutual respect, cooperation, and involvement between the decision-making body and the community in general can this manipulation be minimized or eliminated.