

**HISTORY OF
THE DEVELOPMENT
OF A MODEL ZONING ORDINANCE
FOR ANIMAL FEEDING OPERATIONS**

Final

March 2000



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TABLE OF CONTENTS

<u>Chapter</u>	<u>Page</u>
Foreword	1
Background	1
The AFO Work Group	2
First Meeting of the Work Group	4
Summary of Sub-Committee's Work	6
First Meeting	6
Second Meeting	7
Third Meeting	7
Ordinance Applicability	8
Second Meeting of the Work Group	9
Summary of Comments Pertaining to a Fourth Draft	11
Third Meeting of the Work Group	13
Appendix I	14

FOREWORD

This report was prepared pursuant to Executive Order 1999-03, which indicates that “The Department of Health shall report to my office, [the] progress, status and successes of implementing Senate Bill 2355.” It provides information on the history of the formation of a Work Group assembled to develop a model zoning ordinance for animal feeding operations. It describes the process by which the work group was assembled, the outcome of meetings of the work group and the outcome of a subcommittee of volunteers who prepared a draft handbook for the model zoning ordinance.

The department appreciates the contributions of members of the work group and its subcommittee; specifically, the sharing of concerns and constructive comments during meetings was instrumental in improving an understanding of the issues surrounding the livestock industries and land use administration by local government.

The work product of the work group is a report titled “A Model Zoning Ordinance for Animal Feeding Operations.”

BACKGROUND

Since statehood, agriculture has been the primary industry in North Dakota and a primary part of the state’s economic base. North Dakota’s livestock industry has been an essential component of North Dakota’s agricultural economy and important to the viability of many rural communities.

In recent years, domestic and export market forces and technological changes have caused substantial changes in the nation’s animal production industries. These factors have prompted expansion of confined animal production and feeding operations because of their advantages in economics of scale and ability to adopt the new technologies. The growth of larger operations has resulted in larger quantities of manure and wastewater on some watersheds and the separation of animal production and feeding operations.

In the past, North Dakota’s livestock industry has primarily involved cow-calf operations and other similar livestock production, rather than the large-scale feeding and finishing operations. Other states have been wrestling with the environmental and zoning issues of large operations for the past decade. Difficulties in locating two large-scale hog production facilities, one in the southwest corner of the state and the other in the northeast corner, raised in North Dakota the issue of how and where to locate such large animal feeding operations. Litigation involving the second, the EnviroPork facility, resulted in the introduction of legislation in the 1999 legislative session. After much negotiation and many drafts, the Legislative Assembly passed Senate Bills 2355 and 2365 to limit and guide political subdivisions and the Department of Health in regulating the larger animal feeding operations.

More specifically, SB 2355 amended NDCC chapters 11-33 and 58-03 with similar language pertaining to the zoning authority granted to counties and townships, respectively. The amendments concerning county zoning state, in part:

2. A board of county commissioners may regulate the nature and scope of concentrated feeding operations permissible in the county; however, if a regulation would impose a substantial economic burden on a concentrated feeding operation in existence before the effective date of the regulation, the board of county commissioners shall declare that the regulation is ineffective with respect to any concentrated feeding operation in existence before the effective date of the regulation.
3. A regulation may not preclude the development of a concentrated feeding operation in the county. A regulation addressing the development of a concentrated feeding operation in the county may set reasonable standards, based on the size of the operation, to govern its location.
4. For purposes of this section, “concentrated feeding operation” means any livestock feeding, handling, or holding operation, or feed yard, where animals are concentrated in an area that is not normally used for pasture or for growing crops and in which animal wastes may accumulate, or in an area where the space per animal unit is less than six hundred square feet [55.74 square meters]. The term does not include normal wintering operations for cattle. For purposes of this section, “livestock” includes beef cattle, dairy cattle, sheep, swine, poultry, horses, and fur animals raised for their pelts.
5. A board of county commissioners may not prohibit, through regulation, the reasonable diversion or expansion of a farming or ranching operation.

Within one week of signing SB 2355, Governor Edward T. Schafer issued Executive Order 1999-03. This order states, in part:

1. The Department of Health shall monitor implementation of Senate Bill 2355, and take steps reasonably necessary to protect the environment of the state of North Dakota, according to its responsibilities under law; and
2. The Department shall establish a working group with interested political subdivisions, or their associations to develop model zoning regulations for the subdivisions to implement as they deem appropriate; and
3. The Department of Health shall report to my office, progress, status and successes of implementing Senate Bill 2355.

The department’s role was that of a facilitator in arranging for the work group and conducting its meetings.

THE AFO WORK GROUP

The department arranged for membership on the work group by contacting the North Dakota Association of Counties the North Dakota League of Cities, and the North Dakota Township

Officers' Association. Each of the three associations was invited to designate three representatives for the work group.

The North Dakota Association of Counties responded by designating three individuals; the North Dakota League of Cities named about five candidates, and the department contacted two for the work group; and the Township Officers Association named its secretary. The department, after making some inquiries and having been informed by the Ward County Land Use Administrator that the county had recently updated its comprehensive land use plan, then contacted the chair of the county township officers association, who offered to serve on the work group.

Finally, two producer groups also joined the work group during its first meeting. The members of the work group are listed in the following table.

WORK GROUP MEMBERS	
NAME	AFFILIATION
Claus Lembke	Burleigh County Commissioner
Constance Triplett	Grand Forks County Commissioner
Roger Chinn	McKenzie County Commissioner
Jerry Lein	Wahpeton, Director of Public Works
Steve Frovarp *	Hazen, City Planner
Bryan Hoime *	President, ND Township Officers Assoc.
Donny Malcomb	Chair, Ward County Township Officers Assoc.
Wade Moser *	Executive VP, ND Stockmen's Assoc.
Doug Dukart	Milk Producers Association of ND

During the formation of the work group, several other people expressed interest in the project to develop a model zoning ordinance for animal feeding operations. These people were informed of the first meeting of the work group, and they are listed in the following table.

STAKEHOLDERS REQUESTING TO BE KEPT INFORMED OF THE WORK GROUP'S ACTIVITIES	
NAME	AFFILIATION
Carl Hokenstad *	City Planner, Bismarck-Burleigh

Carole McMahon	Zoning Administrator, Grand Forks County
Linda Kingery	Planner, Red River Regional Planning Council
Barbara Berge *	Planning & Zoning Director, Morton County
Audrey Boe Olsen *	Consulting Planning, Fortuna
Mark Johnson	Executive Director, ND Association of Counties
Connie Sprynczynatyk	Executive Director, League of ND Cities
Scott Birchall	Carrington Research Extension Center
Carl Altenberndt	Planner, Lake Agassiz Regional Council
Norma Duppler	Planning & Zoning Administrator, Barnes County
Don Siebert	Land Use Administrator, Ward County
Roger Scheibe *	Dairy Commissioner, ND Dept. of Agriculture
Charlotte Meier	Executive Director, ND Pork Producers
Dave Muehler	ND Turkey Federation
Brian Kramer	ND Farm Bureau
April Fairfield	Public Policy Analyst, ND Farmers Union
Brad Stevens	Energy & Environmental Research Center
Isis Stark or Mark Trechock *	Dakota Research Council

FIRST MEETING OF THE WORK GROUP

In preparation for the first meeting of the work group, the department assembled information into a three-ring binder for each member of the work group. This information pertained to the following topics: background for formation of the work group, local zoning laws, results of a survey of county auditors or land use administrators and results of a survey of livestock producers about manure management practices, a report by the National Association of Counties on the role of counties pertaining to animal feeding operations,¹ the North Dakota livestock rules (NDAC chapter 33-16-03), reports of two studies of the odors emitted from livestock feeding operations, and examples of ordinances pertaining to livestock feeding operations.

¹ Senate Bill 2355 (1999) used and defined the term “concentrated feeding operation.” A substitute term, “animal feeding operation,” is used throughout this document and the handbook for the model zoning ordinance. The definition used in these documents for “animal feeding operation” follows the definition given by the Environmental Protection Agency.

The first meeting of the work group on AFO Zoning was held on July 27, 1999. A notice and agenda for the meeting was distributed to everyone listed in the tables above. Several people were invited to present information on the topics of existing animal feeding operations across the state, a survey of operators of existing operations as to their awareness of regulatory requirements and their manure handling practices, the issues of encroachment that might be addressed by zoning, and the experiences of two ongoing zoning proposals.

The first meeting of the work group was a success in bringing together people who were interested in zoning of animal feeding operations, in identifying the guiding factors for developing a model zoning ordinance and in creating a follow-up action. The record of the first meeting was distributed to everyone who had attended the meeting and to others who had expressed an interest the work group's activities as noted above. A portion of this record follows.

HIGHLIGHTS OF COMMENTS AND DISCUSSION DURING THE WORK GROUP'S FIRST MEETING

- ✓ land uses are changing; for example, growth and sprawl of larger cities into rural areas is occurring, and it should be anticipated through planning and zoning
- ✓ the zoning concept was originally introduced into law to address nuisance problems between incompatible land uses
- ✓ as farms become fewer and as net returns decrease, family farms are becoming larger
- ✓ size of the animal operation does matter, as larger operations introduce environmental and health concerns due to increased scale of activity usually in confined areas
- ✓ animal feeding operations are changing with improved technologies; some technologies may reduce odor problems
- ✓ the DOH needs to demonstrate to EPA that its "feedlot" program satisfies environmental protection criteria to maintain program delegation; a strong state program tuned into local circumstances provides the DOH with the ability to make such demonstration
- ✓ duplication among state, county and township rules and ordinances should be avoided
- ✓ a significant portion of existing producers lack an awareness of rule requirements and another significant portion have not been permitted by the DOH, thus would not be in compliance with rules
- ✓ one out-of-state local jurisdiction provides information to developers of new property in rural areas which alerts these developers of rural activities which create dust, noise, traffic and odor; this approach could be considered in North Dakota
- ✓ 1,348 of about 1,800 townships within the state are organized; some townships in several counties have relinquished zoning authority to the county, but the number which have is unknown
- ✓ agricultural practices, population densities, climate as well as perceived need for zoning control of AFOs vary among local jurisdictions and regions of the state; however, uniformity of adopted ordinances is preferred where possible

- ✓ a joint powers agreement between local jurisdictions is permissible under law and could reduce the administrative and enforcement burdens of an AFO zoning ordinance while also standardizing the ordinance through out a county or broader region
 - ✓ zoning emphasis should be on the larger animal feeding operations
 - ✓ setbacks should consider the type of animal and the number of animal units
 - ✓ a reverse setback issue occurs where residential dwellings are built near an established AFO
 - ✓ the goal for completion of a model zoning ordinance is January 1st of next year
-

SUMMARY OF SUBCOMMITTEE’S WORK

During the conclusion of the first meeting of the work group, a subcommittee of volunteers was formed to draft a model ordinance. The subcommittee included three members of the work group. As the meetings of the subcommittee were sequentially announced, three additional people by their choosing also joined the meetings of the sub-committee. The names of the persons who participated in the work of the subcommittee are flagged with an asterisk [*] in tables above.

First Meeting - 24 August 1999

Prior to the first meeting of the subcommittee, the department prepared a matrix of issues for consideration by the subcommittee as to merit for inclusion in a draft model ordinance. The matrix was based upon review of issues included in other model, draft or adopted zoning ordinances. Prior to the meeting, the matrix was distributed to the work group, other people who were interested in the actions of the work group, and the subcommittee. The matrix was complex, containing a two-tiered level of potential detail for the model ordinance that could apply to intermediate or larger, respectively, sizes of animal feeding operations.

During the subcommittee’s first meeting, it chose to simplify the matrix by narrowing the scope of the issues for the model ordinance, as well as by reducing those issues which could be approached with the two-tiered level of detail. The subcommittee also discussed setbacks and reverse setbacks for odors, coordination of the zoning permitting process with the department’s permitting process and merits of cooperative or joint powers agreements. In concluding its first meeting, two members of the subcommittee volunteered to assist the department with assembling an initial draft of the model ordinance.

A significant outcome of this meeting was an agreement on separation distances as setbacks or reverse setbacks between animal feeding operations and other (non-agricultural) land-use development for each of four sizes of animal feeding operations. The four sizes were 300, 1,000, 2,000 and 5,000 animal units. The foundation for the shortest distance, which is one-half mile, was the state odor standard, which had been re-established in the NDCC via 1999

SB 2365. The lower size of 300 then implied a threshold for an initial ordinance draft at which a zoning permit would become necessary.

The state odor standard makes an odor concentration of seven or more odor concentration units a violation of the standard at distances greater than one-half mile. This standard applies to all animal feeding operations, regardless of the type of livestock or the number confined and fed by the operation. Nevertheless, hog operations were assigned larger setbacks due to the nature of odors emitted from them.

An initial draft was assembled, and the department expanded the scope of the document for the model ordinance to include a preamble, zoning law, summary commentary and a bibliography. These additional sections were added in anticipation that this information would be needed by other people to understand the content of the model ordinance. Subsequently, these sections helped facilitate subcommittee discussion.

Second Meeting - 12 October 1999

The materials used by the subcommittee for its second meeting were assembled initial drafts of the sections and the model zoning-ordinance elements for a handbook.

The outcome of the second meeting:

- Resulted in several changes to the preamble and the introductory commentary, which describes zoning law, by adding emphasis on the expanded rights to practice farming and ranching from Senate Bill 2355.
- Resulted in several significant and minor changes to the model ordinance.
- Resulted in the subcommittee taking ownership of the draft document by virtue of the decisions that had occurred.

Third Meeting - 26 October 1999

The third meeting of the subcommittee was a marathon meeting that lasted more than four hours. The outcome of this meeting also resulted in further refining of the wording of the emerging handbook for a model zoning ordinance applicable to animal feeding operations.

A summary of consensus among participants attending the third meeting for aspects of the model ordinance handbook is listed in the following table. Consensus is based upon observation of no expressed and unresolved concerns.

HANDBOOK ELEMENT	CONSENSUS	REMAINING UNRESOLVED CONCERN of ONE or MORE SUBCOMMITTEE MEMBERS
Preamble	yes	
Intro Commentary	yes	
Model Land Use Policy	yes	
Model AFO Ordinance	----	
1. Definitions	yes	
2. Equiv. Animal Num.	yes	
3. Permit Procedures	no	permit process, hinges on AFO size threshold when permit required
4. Ownership Change	no	paperwork, hinges on item #3
5. Operating Change	no	paperwork, hinges on item #3
6. Environmental Protection	yes	
7. Water Resource Setbacks	yes	
8. Odor Setbacks	yes	but, hinges on item #3
-. Closure	omit	issue lacks definition
-. Abandonment	omit	issue lacks definition
9. Enforcement	yes	
10. Severability	yes	
Joint Powers Agreements		detailed narrative not discussed
Closing Commentary		detailed narrative not discussed

Ordinance Applicability.

The subcommittee’s third meeting brought into focus those concerns regarding the applicability of the draft for a model ordinance for animal feeding operations. These concerns centered on the size threshold, expressed in animal units, at which operations would be regulated by the model zoning ordinance. Some aspects of the discussion on this issue are described in the “Introductory Commentary” and the “Closing Commentary” for the model ordinance. A summary of the details of the principal aspects of the applicability issue is presented in the Appendix for the benefit of local government officials who might proceed to evaluate, develop and adopt an ordinance.

SECOND MEETING OF THE WORK GROUP

The second meeting of the work group was held on November 30, 1999. A notice for the meeting was distributed to everyone listed in the two tables above. The notice included the subcommittee's draft for an AFO zoning handbook, which contained draft model land-use policies with objectives and a draft model zoning ordinance, as well as a draft of this report.

The ordinance applicability issue described above was reviewed for the meeting participants. A few substantive word changes were made in the model ordinance.

SALIENT COMMENTS DURING THE WORK GROUP'S SECOND MEETING

- ✓ persons planning non-agricultural development in agricultural land-use areas should be expected to know and become aware of livestock producers located nearby, and they should be expected to follow zoning process for obtaining a land-use variance in a delineated agricultural land-use area
 - ✓ (existing) livestock producers in agriculturally zoned areas should be protected from encroachment of non-agricultural land-use development without the burden of obtaining zoning permits
 - ✓ the typical range-cattle operation has about 75 cows
 - ✓ the legislature clearly confined use of zoning ordinances as applied to farming and ranching to the non-normal incidents of farming and ranching
 - ✓ most counties have not adopted comprehensive land use plans and, thus, have not delineated agricultural land-use areas; developers there do not need to seek a land-use variance
 - ✓ existing livestock producers (AFOs) which are normal practices of farming or ranching should not be required to obtain a zoning permit, unless undertaking a major expansion
 - ✓ the permitting process of zoning is needed to document the location and size of AFOs
 - ✓ abandoned farm homes are now being repopulated by 'urban' families, who expect urban services
 - ✓ one purpose for a the model ordinance is to foster consistent AFO zoning criteria among local governments; however, it can be amended as deemed appropriate for local circumstances; currently, fewer than 10 of the state's counties are considering ordinances for animal feeding operations
 - ✓ inventories of existing AFOs by local governments might be a service to land-use developers, as well as necessary for the general land-use planning function of local government
-

A conceptual solution to the applicability size threshold emerged during the second meeting of the work group. Parts 1 and 2 are preferred policy principles, while parts 3 and 4 inject the size thresholds of animal feeding operations, which would be non-normal incidents of farming and ranching and subject to conditional-use (aka special-use) zoning permits.

- 1st. Local governments should adopt comprehensive land use plans and delineate agricultural land-use areas. This process is necessary so as to create the foundation in land-use planning for protection of the practices of farming and ranching. Land-use should be in harmony with first-in-time uses, such as agriculture, consistent with the legal doctrine of coming to the nuisance.
- 2nd. People developing non-traditional, non-agricultural uses of land should need a zoning variance prior to developing land within an agriculturally zoned area. The process of obtaining such variance in the normal administration of zoning can inform all land-use stakeholders of potential land-use conflict.
- 3rd. The word “existing” as applied to animal feeding operations should be defined in the ordinance, and its meaning should be those animal feeding operations in place and operating when the ordinance of a local unit of government takes effect.

4th. Option a.

New AFOs. The zoning permit applicability size thresholds for new animal feeding operations should be 300 animal units for hogs and a larger number for other livestock types, which was not specified in deference to option b. Hog operations generally emit odors that can be obtrusive.

Existing AFOs. The zoning permit applicability size threshold for existing animal feeding operations, other than hogs, should be 1,000 animal units. The threshold for hogs should be a lower number, which was not specified in deference to option b, because hog operations generally emit odors that can be obtrusive.

4th. Option b.

New AFOs. The zoning permit applicability size threshold for new animal feeding operations, regardless of livestock type, should be 300 animal units. The stronger odor emitted by hog operations has already been considered in the odor separation (setback) distances.

Existing AFOs. An existing animal feeding operation, regardless of livestock type, should be required to have a permit whenever the operation increases capacity to handle more than 300 animal units, whether by a single expansion or cumulatively by several expansions. (The size baseline for an existing animal feeding operation would be the capacity of the operation on the date the ordinance takes effect.)

Permitted AFOs.² A permitted animal feeding operation, regardless of livestock type, should be required to have a **new** permit whenever the operation increases capacity to handle more than 300 animal units, whether by a single expansion or cumulatively by several expansions.

The work group favored 4-b over 4-a because it more equitably applies a zoning permit requirement to new and existing (as defined) animal feeding operations but does not require existing operations, regardless of size, to obtain a zoning permit unless expanding to handle more than 300 animal units. This choice signals an interpretation of non-normal incidents of farming and ranching or the reasonable diversification or expansion of farming and ranching (1999 SB 2355). That is, the model ordinance should require zoning permits whenever a new animal feeding operation is constructed to handle more than 300 animal units and whenever an existing or a permitted operation expands capacity to handle additional livestock of 301 or more animal units, whether by one or more increments of expansion.

SUMMARY OF COMMENTS PERTAINING TO A FOURTH DRAFT

On January 4, 2000, concurrence or comments were solicited by the department from the work group, its subcommittee and other stakeholder contacts pertaining to “A Model Zoning Ordinance for Animal Feeding Operations.” The quoted document was the fourth draft prepared by the department on behalf of the work group from discussions during prior meetings of the work group or its subcommittee. This draft contained the latest round of revisions arising from a meeting of the work group held on November 30, 1999.

Comments were received from eight people. Some comments did not seek changes to the content of the model ordinance for animal feeding operations, while other comments did. For example, the following comments did not seek changes to the model ordinance, but rather were recommendations to:

- a. Clarify the purpose of the conditional (or special) use permits in section 3.A.
- b. Move the last paragraph of section 8 pertaining to odor setbacks forward as the first paragraph of that section.
- c. Add a statement in the “Closing Commentary” that the water resource provisions of section 7 do not address siting of animal feeding operations in flood plains.
- d. Change the tone of the document by including greater emphasis on developer awareness.

² The meeting’s participants concluded that “each subsequent cumulative expansion exceeding 300 animal units requires a permit.” Given the definition for “existing,” a distinction was necessary between existing and permitted operations.

- e. Include noise, truck traffic and chemical application, in addition to odor and dust, as aspects of farming or ranching activities under “Developer Awareness.”
- f. Add the web site for the Local Government Environmental Assistance Network, www.lgean.org, to the Reference Bibliography.

In addition to item a above, another comment observed that the setback provisions of the model ordinance as written are independent of the criteria, such as hazards and effects on environmental resources, which create the need for conditional use permits.

Those recommendations for changes in the model ordinance for animal feeding operations were:

- g. Include a category for swine less than 55 pounds within the table of section 2.
- h. Remove the requirement in section 3.C that “a registered land surveyor, civil engineer or other person ...” must prepare the site plan for those operations with fewer than 1,000 animal units.
- i. Remove item 4 of section 4.C, which requires an application for a permit to include information about “surrounding land uses, zoning and ownership,” because the local government should be responsible for this information.
- j. Change the threshold at which operators would be required to apply for and obtain a permit from 300 animal units to 1,000 animal units.

Given the comment that setbacks in the model ordinance are independent of required conditional use permits, the ten sections of the model ordinance were rearranged into three sections with subsections as follows:

- 1. General Provisions
 - 1.1 Definitions
 - 1.2 Equivalent Animal Numbers
 - 1.3 Environmental Provisions
 - 1.4 Enforcement
 - 1.5 Severability
- 2. Setback Requirements
 - 2.1 Water Resource Setbacks
 - 2.2 Odor Setbacks
- 3. Conditional Uses
 - 3.1 Permit Procedures
 - 3.2 Ownership Change
 - 3.3 Operational Change

It is likely that most people participating in meetings of the work group did not disassociate the required setbacks from the required permits even though drafts had not linked the two. A clear disassociation of setbacks for animal feeding operations greater than 300 animal units would free up the threshold for conditional-use permits based upon a size threshold when size can infringe (for reasons other than odor) on the rights of nearby people. The disassociation has merit because the state odor standard (1999 SB 2365) applies to all animal feeding operations regardless of size or type of livestock.

Items b, c and f have been addressed with changes as recommended.

Item g has been addressed by using a value of 0.1 animal equivalent units for a nursery pig. (See section 1.2) South Dakota uses 0.1 animal equivalent units per nursery pig and Minnesota uses 0.05.

Items h and i have been addressed by inserting language that these items would be required for operations larger than 1,000 animal units. (See section 3.1)

Items d and e have been addressed within a rewritten “Introductory Commentary” chapter of the document. The prior narrative in this chapter was transferred into an appendix.

Items a and j are interdependent: a has been addressed in the rewritten "Introductory Commentary," and the zoning permit applicability section of the model ordinance has been rewritten. (See section 3.1, the size threshold remains at 300 animal units). An adjustment for item j was not developed from the record of the work group’s November 30th meeting; for example, setting the threshold greater than 300 animal units.

In addition, one comment indicated that the document was too long: Appendix II, titled “History of the Development of a Model Zoning Ordinance for Animal Feeding Operations” has been removed for printing as a separate document.

THIRD MEETING OF THE WORK GROUP

The third and final meeting of the work group was held on February 29, 2000. A notice for the meeting was distributed to everyone listed in the two tables above. The notice included a fifth draft for an AFO zoning handbook, which contained draft model land-use policies with objectives and a draft model zoning ordinance, as well as an updated draft of this report.

The primary outcome of this meeting was adoption of revised size from 300 to 1,000 animal units for animal feeding operations that would be conditional (or special) use of land. The consensus for the change acknowledged that as a model ordinance local governments can select the size with which to meet local concerns and specific circumstances.

APPENDIX

Applicability of an Ordinance for Animal Feeding Operations

Aspects of Applicability.

Normal zoning procedures of local units of government often require permits prior to construction of buildings and structures. Conditional use (aka special use) permits are issued when proposed buildings or construction is inconsistent with the functional use of the zoned district. The permitting procedures have requirements that are necessary for public participation and for assessment of proposed new construction with established construction criteria.

Two primary purposes for the application of zoning to animal feeding operations have emerged from the subcommittee's deliberations.

One purpose is to foster compatible uses within agriculturally zoned land through separation distances (setbacks) where a new animal feeding operation must distance itself from certain other uses of the land, such as residences, school, churches, etc. The separation distances are intended to disengage the odor, as well as, fly, dust and noise aspects of animal feeding operations from the neighbors of these operations so as to protect the right to practice farming or ranching by fostering harmony (negating complaints).

Another purpose is to protect operators of existing animal feeding operations from encroachment through reverse setbacks (as rights to practice farming and ranching) where new development could not locate within those distances. Thus, this second purpose, in turn, affords subsequent encroachment protection to newly constructed animal feeding operations.

Both purposes follow the duty of local governments to promote public safety, health and welfare; the location of buildings and structures; the occupancy of lands; and the conservation and development of natural resources (NDCC chapters 11-33 and 58-03).

One question arises as to whether the conditional-use permit is the tool needed to implement setbacks and reverse setbacks, regardless of the size of the animal feeding operation. In a simplistic concept, are the permits needed so as to place animal feeding operations "on the map" in a zoned district and so as to establish the "buffer" which is meant to protect the rights of farming by controlling encroachment. The apparent answer is yes.

Another question arises as to whether the conditional uses apply, by virtue of present zoning procedures, to atypical animal feeding operations. For example, in the context of "normal incidents of farming or ranching" (1999 SB 2355), non-normal or atypical incidents would be the larger animal feeding operations. The apparent answer is yes.

Two factors that were briefly discussed by the subcommittee and that relate to the interpretations of the phrase “normal incidents of farming or ranching” (1999 SB 2355) are described in more detail below.

First. The number of animal feeding operations that have been issued permits by the Department of Health is about 440. The department presently requires any livestock feeding operation with more than 200 animal units to obtain a permit. Based upon a recent survey of the livestock industry, some operators of livestock feeding operations larger than 200 animal units may not be aware of rule permit requirements.

Currently, there are:

- about 80 operations with 300 or more animal units;
- nearly 60 operations with more than 500 animal units;
- nearly 35 operations with more than 700 animal units; and
- nearly 30 operations with more than 1,000 animal units.

A bar diagram of these groupings of permitted animal feeding operations follows. The total number of animal feeding operations, which would include those having fewer than 200 animal units, is unknown. In 1997, there were 12,744 beef cow farms; 797 hog farms; 1,170 dairy farms; and 1,101 sheep farms.³ The total number of farms in North Dakota was 31,000 in 1998.

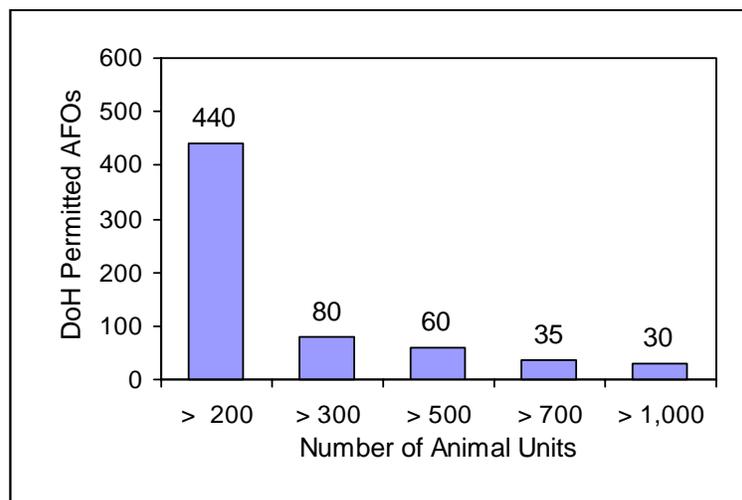


Figure 2. The number of animal feeding operations permitted by the Department of Health for thresholds of numbers of animal units.

Second. Another factor that ought to be considered, however, is the strength of odors emitted into the atmosphere from the combination of animal housing and manure storage structures of animal feeding operations. Odor strength conventionally is expressed as the number of odor

³ Source: Farming in North Dakota, <http://www.ag.ndsu.edu/farming/farmingprimer.htm>

units per second. It generally increases with the number of confined animals, but is also highly dependent upon the type of housing and the type of manure storage structures, including open surface area. The point scatter diagram which follows demonstrates relationships between the number of animal units and the emitted strength of odors from animal housing, which includes confounding factors such as the type of animal housing. The 16 data points on the diagram include one beef steer operation, two Holstein dairy operations, three poultry operations and 10 swine operations.⁴ The emitted strength of odors does not include manure storage structures that are not within the animal housing.

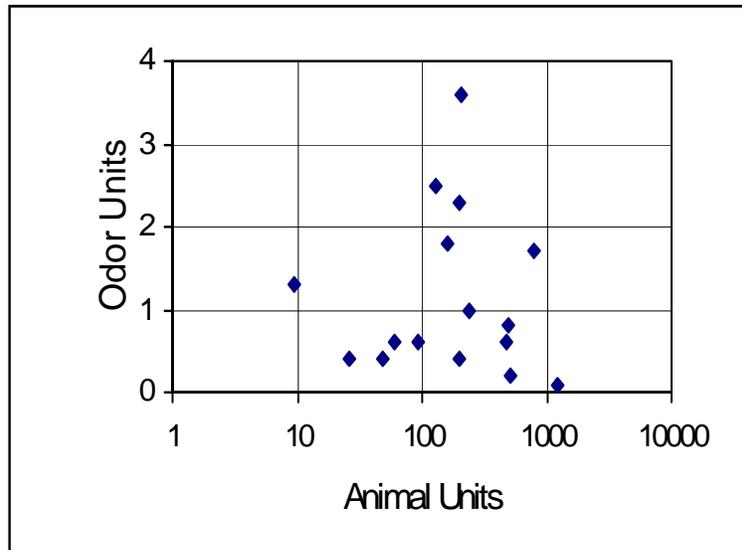


Figure 3. Scatter plot of source odor strength as a function of the number of animal units.

The Pearson correlation for the 16 data points is a -0.21, which indicates no functional dependence for odor source strength on the number of animal units for this data set. The poor correlation likely is influenced or confounded by the type of animal housing. An odor emission strength of two odor units per second is not synonymous with an ambient air concentration of two odor concentration units.

Odor concentrations downwind of animal feeding operations depend upon wind speed and other atmospheric characteristics governing odor dispersal. For example, higher wind speeds dilute odors. The potential frequency of excursions of odors at specific places downwind can be estimated, and this frequency varies by direction, because wind occurs more frequently from some directions than from others. Assessment of odor concentrations at specific places downwind of animal feeding operations requires application of atmospheric transport and

⁴ Source: Jacobson, Larry D., et al. July 18-22, 1999. Odor and Gas Emissions from Animal Manure Storage Units and Buildings, ASAE Paper No. 994004, ASAE, St. Joseph MI.

dispersion calculations or computer models.⁵ Field measurements of odors downwind of animal feeding operations can also be used (1999 SB 2365).

The data set shown in the figure above does not display an apparent best-fit line signature from which an applicability size threshold would be apparent. Since intended separation distances between farming and ranching and other developments originated from concern regarding odor complaints and concern regarding the right to farm or ranch, the source odor strength data favor setting the size threshold at a lower number of animal units. (The separation distances at which odors might cause a conflict with neighboring land uses selected by the first meeting of the sub-committee were not changed during the second or third meetings of the sub-committee.)

A minority view during the third meeting was that existing or new animal feeding operations with fewer than 1,000 animal units already are protected by virtue of being located in an area zoned for agriculture. This view asserted that the burden of knowing the locations of animal feeding operations should be on developers of alternate uses of land through the process of obtaining a variance to agricultural zoning, since the existing ranch or farm would be first in time. This view also indicated concern about subjecting operators to the application information and procedures, including public participation in hearings, as presented in the draft ordinance. The view assumes that the majority of local units of government have adopted comprehensive land-use plans that delineate agricultural-use districts. Another consequence of this view is that local governments might be expected somehow to have the information at hand so that setbacks and reverse setbacks could be applied.

A majority view during the last meeting was that setbacks can apply to new animal feeding operations with more than 300 animal units and can conform to SB 2355; thus, the threshold should be at 300 animal units so as to provide the intended benefit of setbacks and reverse setbacks. Furthermore, some of these subcommittee members also expressed the view that the protection of rights to farm and ranch via reverse setbacks cannot be given to existing animal feeding operations without application of common practices for issuing conditional-use permits, because zoning officials otherwise have no way of knowing where the existing operations are located.

It was noted that state rule thresholds currently apply at 200 and 1,000 animal units, but that the Department of Health hopes to change its 200 threshold to 300 animal units so as to be the same as EPA regulations. The size threshold of animal feeding operations that release odors of sufficient strength such that conflict might arise between those larger operations and neighboring land uses (at setback distances greater than one-half mile) is elusive, because the types of animal housing, as well as the types of manure storage, determine in odor strength. Thus, a threshold, whether at 300 or 1,000 animal units, follows the thresholds for permits required by federal or state rule as a substitute for a threshold derived from odor information.

⁵ Source: Jacobson, Larry D., et al. Odor Rating System Demonstration Project, March - August 1997, Final Report. Department of Biosystems and Agricultural Engineering, University of Minnesota. St. Paul MN.

During the subcommittee's third meeting, the Department of Health proposed an option that would change the threshold from 300 to 1,000 animal units and that an operator of an existing animal feeding operation with fewer than 1,000 animal units be given zoning protection if the operator "registers" (meaning written notice including certain information) that operation with the local unit of government. This proposal was unanimously rejected.

Summary of the Applicability Issue.

The purpose of the separation distances of the model ordinance is to disengage the odor, as well as fly, dust and noise aspects, of animal feeding operations from the neighbors of these operations so as to protect the right to practice farming or ranching by fostering harmony (negating complaints). Separation distances would be imposed as setbacks on new animal feeding operations and as reverse setbacks on encroaching development. Local units of government cannot achieve this purpose without knowing where new animal feeding operations are proposed to be located or where existing operations are located.

The designated land-use districts (zones or zoning) of land-use plans and the conditional-use permits, granted in accordance with adopted plans and designated districts for the jurisdictional areas of local governments, provide the mechanisms for recognition and promotion of separation distances.

The notable features for each of the two applicability size thresholds for the permitting function of zoning, namely 300 and 1,000 animal units, are listed below.

Threshold of 300 animal units relative to a threshold of 1,000 animal units

- ① A threshold of 300 animal units is consistent with the threshold at which the federal rules for animal feeding operations apply. The department plans to amend the state feedlot rules upward from 200 animal units to 300 animal units so that the state rule threshold becomes the same as federal regulation.
- ② If the operator of an existing animal feeding operation implements a "major" expansion so as to exceed 300 animal units, this operator would have to apply for a conditional-use permit and would then be protected from subsequent encroachment via the reverse setbacks.
- ③ New animal feeding operations with more than 300 animal units would need a conditional use permit and would be subject to the odor and source-water setbacks. These animal feeding operations then would be protected from encroachment through reverse setbacks.

- ④ The lower threshold increases the likelihood that reverse setbacks to control encroachment will diminish neighbor complaints about odor, as well as flies, dust and noise.
- ⑤ The lower threshold increases by about 50 the number of existing animal feeding operations that could become regulated by the model zoning ordinance, IF each operator of these operations decides to implement a “major” expansion.

Threshold of 1,000 animal units relative to a threshold of 300 animal units

- ❶ A threshold of 1,000 animal units is consistent with the threshold at which the federal EPA NPDES regulations apply.
- ❷ If the operator of an existing animal feeding operation implements a “major” expansion so as to exceed 1,000 animal units, this operator would have to apply for a conditional use permit and would then be protected from subsequent encroachment via the reverse setbacks.
- ❸ New animal feeding operations with more than 1,000 animal units would need a zoning conditional use permit and would be subject to the odor and source water setbacks. These animal feeding operations then would be protected from encroachment through reverse setbacks.
- ❹ The higher threshold decreases the likelihood that reverse setbacks to control encroachment will diminish neighbor complaints about odor, as well as flies, dust and noise.
- ❺ The higher threshold decreases by about 50 the number of existing animal feeding operations which could become regulated by the model zoning ordinance, IF each operator of these operations decides to implement a “major” expansion.

The following matrix summarizes the concepts for application of zoning as presented by the work group’s subcommittee.

CONDITIONAL USE (aka SPECIAL USE) PERMIT REQUIREMENTS		
	Size of Animal Feeding Operation (animal units, a.u.)	
AFO	< 301 a.u.	more than 300 a.u.
Existing	no	yes, but only if operator plans a “major” expansion as administered by the local unit of government
New	no	yes

Animal feeding operations that exist at the time a local unit of government adopts the provisions of the model ordinance, regardless of size, do not have to apply for zoning conditional-use permits. Thus, the existing animal feeding operations are not protected from encroachment until the operator receives a conditional-use permit, which would be required only when the operator implements a “major” expansion. Local units of government would decide whether an expansion was “major” based upon factors, - including but not limited to, location conditions, environmental conditions, or public safety, health or welfare - that could reasonably be affected.