

**Report of the Legislative Apportionment Board  
On the Proposed Senate Reapportionment**

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## **Legislative Apportionment Board Members**

Thomas A. Little, Shelburne, Vermont, Special Master and Chair, is Vice President and General Counsel at Vermont Student Assistance Corporation in Winooski, Vermont. He served in the Vermont House of Representatives for the sessions from 1992 through 2002. Currently, he is Chair of the District 4 Environmental Commission.

Megan Brook, South Burlington, Vermont, is the President & CEO of Volunteers For Peace, a nonprofit organization promoting international voluntary service as an effective means of intercultural education, service learning and community development. She is on the State Coordinating Committee of the Vermont Progressive Party and is its Chittenden County Chair.

Frank Cioffi, St. Albans, Vermont, is President of the Greater Burlington Industrial Corporation, the regional economic development corporation serving Chittenden County, Vermont. He is a member of the Board of Trustees of the University of Vermont.

Gerry Gossens, Salisbury, Vermont, is a retired Intelligence Officer who has over 20 years' experience in local and regional government. He chaired the Salisbury Selectboard, as well as the Vermont Water Resources Board. He also served two terms in the Vermont House of Representatives and two terms in the Vermont Senate.

Steve Hingtgen, Montpelier, Vermont, is a small business owner. He served in the General Assembly from 1999 to 2004, representing Burlington's Old North End and downtown neighborhoods.

Neale Lunderville, South Burlington, Vermont, is in charge of the Smart Grid program at Green Mountain Power Corporation. He served as Secretary of Administration and Secretary of Transportation in the administration of Governor James H. Douglas.

Robert Roper, Stowe, Vermont, currently is the host of True North Radio. He previously was Chairman of the Vermont Republican Party, Executive Director for the Vermont Chapter of FreedomWorks and Executive Director for Vermonters for Better Education.

## **Report of the Legislative Apportionment Board On the Proposed Senate Reapportionment**

### **Introduction**

Sections 13, 18 and 73 of Chapter II of the Vermont Constitution mandate reapportionment of the Vermont Senate and House following the release of the decennial U.S. Census. The General Assembly enacted Chapter 34A of Title 17, establishing the Legislative Apportionment Board (the Board) to prepare and file proposed Senate and House plans to adjust district boundaries to reflect shifts in population and assure substantially equally representation.

The 2010 Census counted 625,741 residents in the state. This is up 16,914 residents from 2000, a 2.8% increase. Dividing the 2010 population by our 30 Senate districts yields an ideal district population of 20,860. The Census data for the existing Senate districts is included with this Report at Appendix A. The Board's proposed Senate district Map is included at Appendix B.

The Board reviewed a plan that made relatively few adjustments to the existing districts (but which did subdivide the Chittenden district), but this left the overall deviation at just above 20, which was not viewed favorably. The Board also reviewed a plan with all single-member districts, but this encountered opposition within the Board, based on the lack of much resemblance to the county structure, a factor set forth in our state Constitution and statutes. Thus, neither of these alternatives gained the support necessary to achieve a consensus. The resulting plan adopted by the Board proposes significant changes to the districts in the northern half of the state, to account for the recent decades of population shift towards the northwest portions of the state. Respect for county lines played a significant role in drawing the Board's final map. The driving factor behind the adopted map, however, was the constitutionally mandated goal of making whatever changes proved to be necessary to achieve substantially equal representation in the Senate for Vermonters, regardless of where they live.

The Board devoted considerable time and effort to the issue of large, multi-member districts. This issue comes up for discussion with every reapportionment cycle, and the position of various Apportionment Boards on the issue is typically expressed in their final proposals. The 1972 and 1981 Board plans proposed eliminating the large districts with many at-large Senators in favor of smaller districts with fewer Senators to achieve what those Board's saw as more effective representation. In 1981, the Board proposed dividing the Chittenden and Rutland districts into smaller districts. The Board specifically noted in its plan that a multi-member district with a large population center potentially disenfranchises residents in the smaller towns of the district. The Board plan in 1972 also proposed smaller districts in the interest of substantial equality. The 2001 Board plan in contrast points to the value of maintaining some multi-member districts (see pp. 8-9 of the Board's 2001 plan). The House Committee on Government Operations proposed a plan with 15 two-member districts; it was not embraced by the Senate.

During the winter and spring of 2011, the Board received correspondence that included public sentiment about multi-member districts mainly favorable to the breaking up of the Chittenden district. These constituents believe that the time and financial costs of campaigning in the Chittenden district hinder candidates for office. Other correspondence voiced concern about the prevalence of bullet voting and other forms of tactical voting that occurs in multi-member districts. The Board received no correspondence recommending retention of the current Chittenden district.

Some have questioned the constitutionality of a six-member district. The Vermont Constitution and statutes are silent on this, and no court has ruled on the issue. Chapter II, § 18 of the Constitution (and subsequent court cases) suggest that – in addition to the mathematical standard – county lines should be preserved when creating districts. The multi-member districts over the years have typically met those requirements.

In the end, the Board determined that breaking the Chittenden district into smaller districts has merit, and at least ought to be squarely raised as a proposal to the Senate for due consideration.

### **Role and Function of Legislative Apportionment Board**

The Board was constituted in 2010 and has seven members. Each of the three major political parties chose a member;<sup>1</sup> Governor Douglas appointed one member from each party<sup>2</sup> and the Chief Justice of the Vermont Supreme Court appointed the Board's Chair.<sup>3</sup> The Board's meetings were open to the public and its records are public records.

The Board looked at each Senate district's percentage deviation from the ideal district population. Each existing Senate district has a positive or negative deviation percentage. For example, a district with a population of 22,060 has 1,200 residents over the apportionment standard of 20,860, and a deviation of +5.75 %. A district with a population of 19,060 has 1,800 residents under the standard, and a deviation of -9.44 %. The difference between the district with the highest positive deviation and the lowest negative deviation is the "overall deviation" of the Vermont House apportionment. To the extent that a district has a significant negative or positive deviation, it is over- or under-represented.

The law requires Senate districts with "minimum" deviation percentages. 17 V.S.A. §1903(b). The statute does not define "minimum," but Vermont and U.S. Supreme Court decisions tell us an overall deviation under 10% is presumptively constitutional and one somewhat greater than 16% is probably constitutional.

In addition to the overall deviation, the Board is guided by three policies set down in statute: (1) preservation of existing political subdivision lines; (2) recognition and maintenance of patterns of geography, social interaction, trade, political ties and common interests; and (3) use of compact and contiguous territory. 17 V.S.A. §1903. When ruling on a challenge to a redistricting

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<sup>1</sup> Gerry Gossens was chosen by the Vermont Democratic Party, Robert Roper was chosen by the Vermont Republican Party, and Steven Hingtgen was chosen by the Vermont Progressive Party.

<sup>2</sup> Governor Douglas appointed Democrat Frank Cioffi, Progressive Megan Brook and Republican Neale Lunderville.

<sup>3</sup> Chief Justice Paul Reiber appointed Thomas A. Little as Special Master and Chair.

plan, the courts give significant weight to these non-numerical factors. Avoiding putting a steep mountain in the middle of a district may yield district lines that are not intuitive from looking at a flat map of the state. The Vermont Constitution also directs that in setting the Senate district lines we should adhere to county boundaries. Vt. Const., Ch. II, §18. (Yet under the existing Senate plan, Washington and Windsor Counties are the only Senate districts where the county lines and the district lines are the same.)

Three of the thirteen current Senate districts have positive or negative deviations of concern: (i) Chittenden at +11.45, Franklin at +10.83 and Windsor at -9.44. The Board ultimately focused on these districts, but "fixing" them generally involved making adjustments to the boundaries of one or more adjoining districts, causing a ripple effect.

### **Constitutional and Statutory Principles**

The 2001 Board's report presents a well-written explication of the constitutional and statutory principles that govern or guide this Board's work, and we include this in Appendix C with this Board's endorsement. The 2001 report includes an analysis of the Vermont Supreme Court's important 1993 decision, *In re Reapportionment of Town of Hartland*, where the Court decided consolidated reapportionment disputes involving the constitutional and statutory issues of (i) substantial voting equality, (ii) geographical compactness and contiguity, and (iii) patterns of geography, social interaction, trade, political ties and common interests. 160 Vt. 9 (1993).

Since the 2002 reapportionment, the Vermont Supreme Court has issued one redistricting decision, *In re Reapportionment of Towns of Woodbury and Worcester*, 177 Vt. 556 (2004). The residents of the Washington County towns of Woodbury and Worcester unsuccessfully challenged the reapportionment of their districts, arguing that placing their towns in the new Lamoille-Washington-1 two-member district violated the requirements of compactness and contiguity and did not respect county lines. The case did not involve a challenge based on population deviation.

The Supreme Court appointed a special master who took testimony and issued findings of fact on the Town's claims. "The master found that all four towns have one or more boundaries in common with another town in the district, and that the T-shaped district 'in fact is contiguous and relatively compact.'" *Id.* at ¶ 12. The Court also noted that the challenged plan "places ninety-eight towns in districts that cross county lines, which is not unusual. In fact, in this respect it is identical to the 1992 reapportionment plan we upheld in *Hartland*, 160 Vt. at 31, 624 A.2d at 336." *Id.* at ¶ 16. The Court concluded that the two Towns had failed to clear the strong presumption in favor of a plan adopted by the General Assembly.

In addition to an analysis of population numbers, there is need for a credible argument demonstrating how the other standards beyond equality are met. In the *Mahan* case, the United States Supreme Court said 16.4% "approach[es] tolerable limits." It explained that the ultimate inquiry is whether the legislature's plan "may reasonably be said to advance [a] rational state policy," and if so, "whether the population disparities among the districts that have resulted from the pursuit of this plan exceed constitutional limits." *Mahan v. Howell*, 410 U.S. 315, 318 (1972).

## **Substantial Equality**

In the Board's Senate proposal, county lines are a "rational state policy" shaping the districts with an overall deviation of 14.87 %, with a low of 19,452 residents per Senate member in the Grand Isle-Chittenden district (a -6.74 % deviation) and a high of 22,555 residents per Senate member in the Caledonia-Essex district (a +8.13% deviation).

The Board believes that its meeting Minutes and the record it has created of its draft proposals, and its initial and final proposal, establish that the overall deviation is justified by the important non-numerical factors the Vermont Supreme Court has looked to when assessing the substantial fairness of an apportionment plan.

## **Geographical Compactness and Contiguity**

The compactness of a legislative district is generally accepted as an important factor in assessing the soundness of an existing or proposed district's boundaries. Common sense tells us that a non-compact district that stretches out in a narrow band over a long distance, over mountains and valleys, is likely at risk of not capturing a community or group of communities that share common cultural, social, political and commercial ties and interests. As noted at Page 4 of the 2001 Board's report, "in the Hartland case, the Supreme Court explained that these criteria 'are an implementation and extension of our constitutional requirements that the legislature 'seek to maintain geographical compactness and contiguity and to adhere to boundaries of counties and other existing political subdivisions.'" Hartland decision at 21-22.

The Maptitude for Redistricting software can measure compactness using seven different approaches. The Apportionment Board in 2001 used two of these seven methodologies, the "Roeck" score and the "Polsby-Popper" rating, to measure the compactness of the current and proposed Senate districts.

The Roeck test is an area-based measure that compares each district to a circle, which is considered to be the most compact shape possible. For each district, the Roeck score computes the ratio of the area of the district to the area of the minimum enclosing circle for the district. The measure is always between 0 and 1, with 1 being the most compact. The Roeck test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. (Roeck, E. C., Jr. Measuring the compactness as a requirement of legislative apportionment. *Midwest Journal of Political Science*, 5:70-74, 1961.)

The Polsby-Popper test computes the ratio of the district area to the area of a circle with the same perimeter:  $4\pi\text{Area}/(\text{Perimeter}^2)$ . The measure is always between 0 and 1, with 1 being the most compact. The Polsby-Popper test computes one number for each district and the minimum, maximum, mean and standard deviation for the plan. (Polsby, D. D., and R. D. Popper. The third criterion: compactness as a procedural safeguard against partisan gerrymandering. *Yale Law and Policy Review*, 9:301-353, 1991.)

The 2011 Apportionment Board continues this practice, finding the two methodologies to be reasonably easy to understand and for the sake of consistency with the 2001 Apportionment



Board report. Appendix D is a spreadsheet with the Roeck scores and Polsby-Popper ratings of the proposed Senate districts. The averages for both measurements for the proposed districts are slightly better than those for the existing districts. Under the Board's proposed plan, there are no non-contiguous areas in any district.

The Board's proposed plan retains, with few changes, the compactness and contiguity of the 2002 plan for the Counties of Bennington, Windham, Rutland, Addison, Washington and Lamoille. As noted above, the northern counties show more changes in shape as a result of boundary movements corresponding to population shifts.

The proposed Caledonia-Essex district is now the more sprawling district and the Orleans district more compact, whereas under the current Senate map, the sprawling district is Essex-Orleans. This seems to the Board to be a reasonable trade-off, and one driven by the sparseness of the population in large chunks of those counties. Under our Constitution, people – not counties - have Senators. Moreover, the significant re-working of these three districts came as the Board realized that continuing to add out-of-county towns to them, in order to support four Senate seats, was no longer a fair or sustainable course – for compactness reasons in addition to the concerns about equality of representation.

The Chittenden and Grand Isle Chittenden districts are compact and all contiguous (with the possible caveat about the causeway and water contiguity issue that has been mentioned by prior Apportionment Boards regarding the Grand Isle-Chittenden district. Removing Alburgh from the Franklin districts probably makes an improvement in this regard, and “repatriating” Richford and Montgomery makes a compact Franklin district. Subdividing the Chittenden District as proposed yields three significantly more compact districts than the current plan’s six member at-large district.

The Board’s proposal moves all Orange County towns back into that district, and then in order to achieve two districts with two members each, subdivides the Windsor district. The result is a Windsor district with three towns running up along the Connecticut River, but in the Board’s judgment, this is a logical result as those towns should stay connected to a southern Windsor County Senate district.

### **Adherence to County Boundaries and Other Existing Political Subdivisions**

The proposed plan strives for faithfulness to County boundaries. Exceptions, and the reasons for them, are:

- Bennington – Windham: the proposal shifts three Windham County towns into the Bennington Senate district (Londonderry, Jamaica and Stratton). These towns have affinities towards the west, and in their proposed House districts are aligned in that manner. This shift improves the Bennington deviation. In turn, the proposal would shift the Bennington County towns of Searsburg and Readsboro into the Windham Senate district, for similar affinity reasons.
- Rutland: The return of Brandon to this district makes Rutland County whole as a three-member district.

- Windsor - Orange: This district is subdivided to support two Senators, and a shared two Senators with Orange County. Thus, the common boundary line would no longer be the common county line. The Orange districts would see the return of the five towns that have been shifted in the past to support a second Senator for the Caledonia district.
- Addison: This district sees the addition of Charlotte, from Chittenden County, and the loss of Brandon, back to Rutland County, thus creating one break in a county line and eliminating another.
- Washington - Lamoille: The boundary changes necessary to address the shifts in the Caledonia-Essex-Orleans districts, and the population growth in the Lamoille district, are behind the movement of Elmore from the Lamoille district to the Washington district. Lamoille remains integrated with the other exception of Wolcott, which - as is the case now, is placed in a district dominated by another County (Caledonia). Finally, Eden is returned to Lamoille from the Orleans district.
- Caledonia-Essex-Orleans: These districts currently reach across county lines to encompass towns from other counties. Under the Board's proposal, less of this occurs.
- Franklin – Grand Isle-Chittenden: Montgomery and Richford are restored to the Franklin district from Orleans County, making that county line intact. In order to accommodate population growth in the Franklin district, and in the Grand Isle-Chittenden district (which becomes a two member district), Franklin gives Alburgh back to the Grand Isle-Chittenden district (restoring that county line), but Franklin gives up Georgia. In the final 1972 plan for the Senate districts, Georgia was part of the Grand Isle district.
- Chittenden: With the exception of the proposed Charlotte move into Addison County, the balance of the Chittenden district follows county lines. The district's population is too high to retain all towns, and the Charlotte shift appeared to be a logical place to make that move, in terms of population, contiguity and compactness. The only other like choice would have been Hinesburg, but that would not have worked, as it would leave Charlotte unattached to the Chittenden East Senate district and too large in population to be added to the Chittenden West Senate district.

### **Patterns of Geography, Social Interaction, Trade, Political Ties and Common Interests**

These statutory criteria were taken into consideration by the Board throughout the discussions and debate that led to the plan adopted on June 29, 2011. The Board sought to strike a balance among rural, urban and suburban interests, realizing, however, that these areas are not evenly distributed around counties or the state, or in places that are conducive to drawing simple or easy district lines. The population shifts since the 1960's have shown no regard for county lines, and often for geography. In a more highly mobile society, social interactions, trade and common interests appear more subject to change. It was often difficult for the Board to put its finger on what made a certain proposed Senate district "work," but this combination of non-numerical factors was used to reach the Board's proposed map.

## **Incumbency**

The law does not direct the Board to consider incumbencies as a factor in drawing Senate district lines, and the Board did not do so.

## **Conclusion**

The Board read the prior Senate apportionment proposals, and state and local maps; studied the geography and topography of each part of the state; and considered a remarkable variety of Senate proposals generated by Board members and others. The Board members drew upon personal experiences in local government throughout the state and, in some cases, prior experiences in the reapportionment process.<sup>4</sup> The Board made a concerted effort to draw a map that takes into proper account the population realities of our state, attention to county boundaries where feasible, and the non-numerical apportionment factors chosen by the General Assembly. The Board is confident that there is more than one way to draw a good, constitutional and sensible Senate map, but believes its proposal presents the people of the state with a sound option.

Respectfully submitted,

Thomas A. Little, Shelburne, Special Master and Chair

September 20, 2011

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<sup>4</sup> Board Chair Little was a member of the House in the apportionment years of 1992 and 2002. Member Gerry Gossens was on the Senate committee with jurisdiction over the process in 2002. Member Steve Hingtgen was a member of the House Committee on Government Operations in 2002.

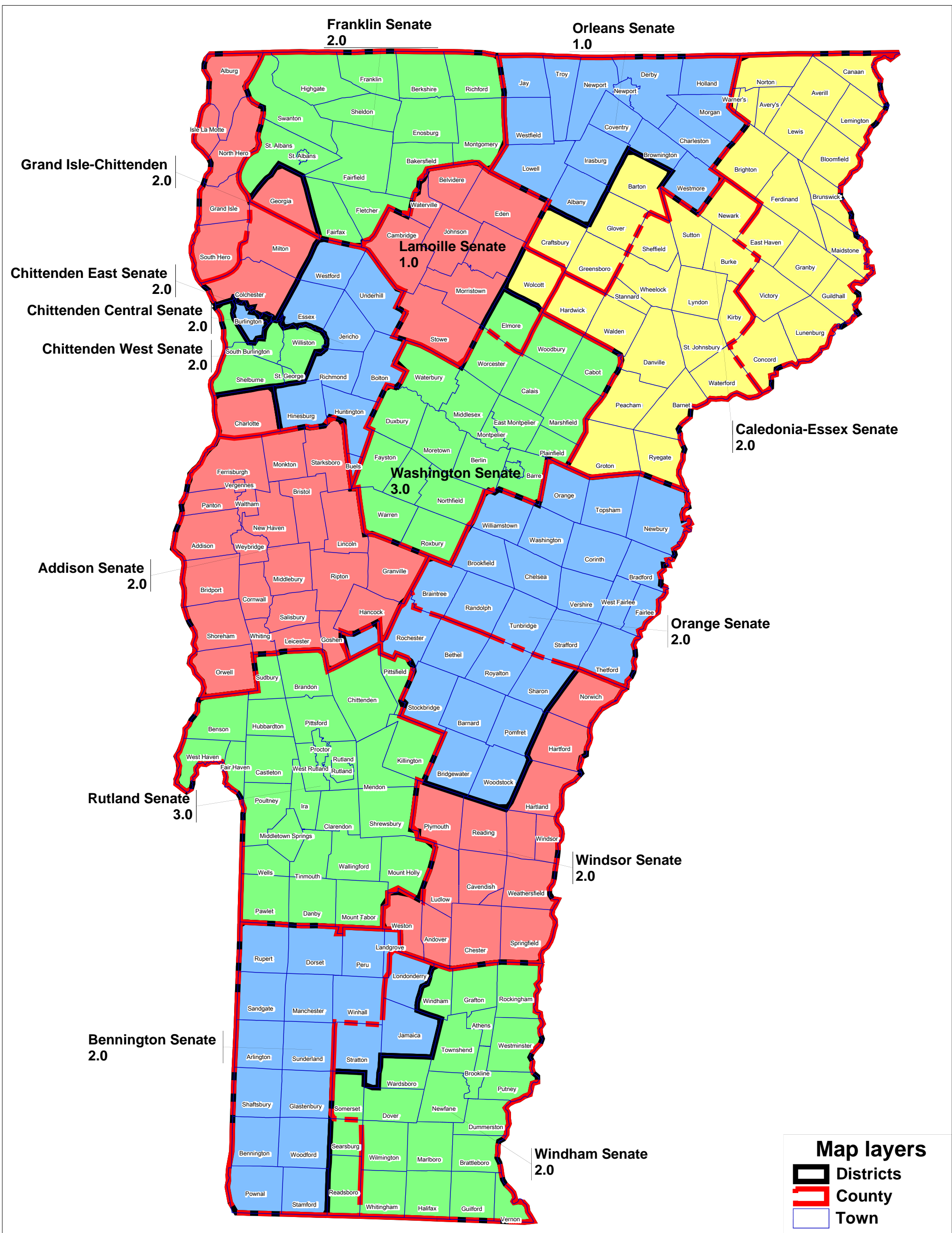
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## APPENDIX A

2010 Apportionment Standard: 20,858 people per Senator  
 2000 Apportionment Standard: 20,294 people per Senator

Current Senatorial District	2010 Population	Deviation from 2010 Standard	Percentage Deviation from 2010 Standard	Senators in Current District	2000 Population	Deviation from 2010 Standard	Percentage Deviation from 2000 Standard
ADDISON	40,787	-929	-2.23%	2	39,891	-697	-1.72%
BENNINGTON	39,001	-2715	-6.51%	2	39,219	-1369	-3.37%
CALEDONIA	40,114	-1602	-3.84%	2	38,076	-2512	-6.19%
CHITTENDEN	139,478	14330	11.45%	6	129,585	7821	6.42%
ESSEX	40,045	-1671	-4.01%	2	38,657	-1931	-4.76%
ORLEANS	40,045	-1671	-4.01%	2	38,657	-1931	-4.76%
FRANKLIN	46,235	4519	10.83%	2	44,056	3468	8.54%
GRAND ISLE	22,039	1181	5.66%	1	21,935	1641	8.09%
LAMOILLE	21,476	618	2.96%	1	20,625	331	1.63%
ORANGE	20,049	-809	-3.88%	1	19,852	-442	-2.18%
RUTLAND	57,676	-4898	-7.83%	3	59,483	-1399	-2.30%
WASHINGTON	59,534	-3040	-4.86%	3	58,039	-2843	-4.67%
WINDHAM	42,637	921	2.21%	2	41,991	1403	3.46%
WINDSOR	56,670	-5904	-9.44%	3	57,418	-3464	-5.69%
<b>Totals</b>	<b>625,741</b>			<b>30</b>	<b>608,827</b>		

# Appendix B - Legislative Apportionment Board Senate District Map



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Reapportionment**  
**APPENDIX C – CONSTITUTIONAL AND STATUTORY PRINCIPLES**  
**(2001 LAB Report Excerpt)**

**Constitutional and Statutory Principles**

The Vermont Constitution identifies three principles in designing the House and Senate plans for reapportionment. The General Assembly is required to afford equality of representation and to “seek to maintain geographical compactness and contiguity and to adhere to the boundaries of counties and other existing political subdivisions.” Vermont Constitution, Chapter II, Section 73. A statute in the title on elections restates these principles and adds an additional criterion, which encourages “preservation of existing political subdivision lines; recognition and maintenance of patterns of geography, social interaction, trade, political ties and common interests; use of compact and contiguous territory.” 17 V.S.A. § 1903(b).<sup>1</sup>

**a. Substantial Equality.** Numbers make all the difference in reapportionment. Without “equality of representation” or substantial equality, as the courts have defined it, no plan will pass muster in a review by the judicial branch. Perfect equality (20,295 people per district) is unachievable, without subdividing counties and towns. In 1991, the deviation in the final Senate plan was 16.4%.<sup>2</sup> Twenty years earlier, the Vermont Supreme Court rejected a Senate districting plan using 25.3% as the deviation. In re Senate Bill 177, 130 Vt. 358, 370 (1972). Subsequently, the Supreme Court approved a Senate district plan from 1971 that had a deviation of 16.65%. In re Senate Bills 177 & 83, 132 Vt. 282 (1974). Numbers alone won’t justify a particular deviation. There is need for findings and a credible argument demonstrating how the other standards beyond equality are met, in order to justify a particular percentage deviation.

In the Mahan case, the United States Supreme Court agreed that a state legislative district with a deviation of 16.4% “approach[es] tolerable limits.” It explained that the ultimate inquiry is whether the legislature’s plan “may reasonably be said to advance [a] rational state policy” and, if so, “whether the population disparities among the districts that have resulted from the pursuit of this plan exceed constitutional limits.” Mahan v. Howell, 410 U.S. 315, 318 (1972).

**b. Geographical compactness and contiguity.** This principle is a measure of the shape of each district. A district strung together in a straight line may not reflect a sense of community for its member towns. A district with parts separated from each other by other districts is certainly going to find it difficult to coalesce as a single unit of representation.

The computer program used by the LAB is Maptitude. It calculates compactness geometrically. Two measures were taken on compactness using this program. The first is the Roeck test, an area-based measure that compares each district to a circle (the most compact shape possible), computing the ratio of the area of the district to the area of the minimum enclosing circle. A perfect circle would have a ratio of one. The other measure is the Polsby-Popper test, which computes the ratio of the district area to the area of a circle with the same perimeter. As with the Roeck test, one represents the most compact district. Of course, none of the districts are circular, but the respective scores on these tests provide

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**APPENDIX C – CONSTITUTIONAL AND STATUTORY PRINCIPLES**  
**(2001 LAB Report Excerpt)**

some technical measure of the compactness of the proposed districts.

Of this principle, the Vermont Supreme Court has written, “Voters in a community are less effectively represented when their elected representative’s principal constituency lies outside their community and has interests different from their own. (Citations omitted). These considerations are particularly relevant in this state, which has a long history of preserving the independence and integrity of local government.

“Similarly, compactness and contiguity requirements ultimately concern ‘the ability of citizens to relate to each other and their representatives and . . . the ability of representatives to relate effectively to their constituency.’ These relationships are fostered through shared interests and membership in a political community. They are undermined, however, when geographic barriers that severely limit communication and transportation within proposed districts are ignored.” In re Reapportionment of Town of Hartland, 160 Vt. 9, 21-22 (1993).

**c. Adherence to county boundaries and other existing political subdivisions.** This criterion is a measure of the Plan’s respect for existing political subdivision lines. In the case of In re Senate Bills 177 & 83, supra, 132 Vt. at 286, the Vermont Supreme Court ruled that other considerations such as maintaining integrity of county lines must yield to that of equal representation. The criterion is addressed in the Tentative Plan.

**d. Patterns of geography, social interaction, trade, political ties and common interests.** In the Hartland case, the Supreme Court explained that these criteria “are an implementation and extension of our constitutional requirements that the Legislature ‘seek to maintain geographical compactness and contiguity and to adhere to boundaries of counties and other existing political subdivisions.’” In re Reapportionment of Town of Hartland, supra, 160 Vt. at 22.

In Hartland, the Supreme Court rejected the placement of Montgomery in a House district with Franklin County towns. The Court was concerned that the legislative record showed no evidence of any consideration of patterns of geography and social interaction. In re Reapportionment of Town of Hartland, supra, 160 Vt. at 24. Two years later, after the legislature made its report, the Court concluded the decision to place Montgomery in Franklin County was neither irrational nor illegitimate, and the plan remained in place for the remainder of the decennium. In re Reapportionment of Town of Montgomery, 162 Vt. 617, 618 (1994).

The Tentative Plan addresses these criteria, as well as all other criteria, district by district. Geography is always a consideration. Social interaction and trade are considered by a review of the transportation network, population centers for each district, and memberships in regional organizations. Political ties are not as obvious, but common interests were considered as reflected in the other criteria under this heading. The public hearings of the Board were very instructive in pointing out residents’ concerns about alignments with other towns.

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**APPENDIX D – Measures of Compactness**

<b>DISTRICT</b>	<b>2011 Roeck</b>	<b>2011 Polsby-Popper</b>
ADDISON	0.56	0.46
BENNINGTON	0.48	0.47
CALEDONIA	0.38	0.28
CHITTENDEN-CENTRAL	0.38	0.36
CHITTENDEN-EAST	0.35	0.32
CHITTENDEN-WEST	0.45	0.30
ESX-ORLEANS	0.52	0.50
FRANKLIN	0.55	0.53
GRAND-ISLE	0.33	0.32
LAMOILLE	0.62	0.62
ORANGE	0.49	0.37
RUTLAND	0.67	0.42
WASHINGTON	0.53	0.53
WINDHAM	0.45	0.42
WINDSOR	0.32	0.33