



2024-25

BUDGET FORUM

April 10, 2024

SCIENCE RESEARCH



An Investigation of Jet Assisted Surface Mounted Actuators in Laminar and Turbulent Boundary Layers

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ETSD029

Research Question

- Flow control offers a way to improve the aerospace industry through efficiency, stealth, and stability
 - Concentrating flow control in the boundary layer (BL) is promising as the BL is a universal feature surrounding aerodynamic bodies
- Hybrid flow control combines elements of passive and active flow control
 - The Jet Assisted Surface Mounted Actuator (JASMA) utilizes the wake of a pin (passive flow control) with a synthetic jet actuator (SJ) (active flow control) (Fig.1)

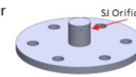


Figure 1. CAD representation of JASMA.

Aim: To investigate how the wake of a passive pin and synthetic jet actuator (JASMA) influence their respective flow control capabilities within BLs.

Methodology

- Data was collected using 2D-PIV (Fig.2)
- Four JASMA's studied:
 - Three 12mm JASMA's at 0°, 20°, and 45° orifice pitch
 - 6mm JASMA with a 0° pitch
- Laminar Reynolds Number of 8.11×10^3
- Turbulent Reynolds Number of 2.43×10^4
- Time-averaged (TA) and four phase locked (PL) repeated
- Two blowing ratios (C_b) per BL condition
- 656 normalized figures generated in MATLAB
 - Vorticity (ω_z), u^* and, v^*
- Data Key: Vorticity (ω_z), Horizontal Velocity (u/U), Vertical Velocity (v/U)

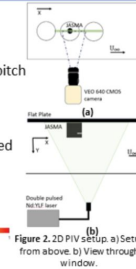
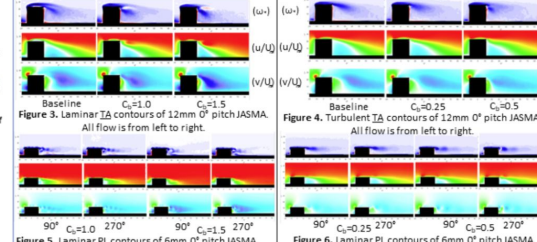


Figure 2. 2D PIV setup. a) Setup from above b) View through window.

Laminar

Selected Figures

Turbulent



Laminar

Analysis & Conclusion

Turbulent

- Reattached region of separation over pin seen in baseline case (Fig.3)
 - Potential to manipulate BL
- Global phenomenon suggests arch-vortex shedding locked onto SJ frequency (Fig.5)
 - Data re-taken to confirm previously unseen structures upstream of orifice
- 6mm JASMA $C_b=1.5$ cases disrupted pin wake structure coherence (Fig.5)
 - JASMA's offer a viable flow control solution in various boundary layers.
- $C_b=0.25$ was too weak and had little effect on pin structures (Fig.4)
 - $C_b=0.5$ had an effect on structures
 - Would need a higher C_b to have a greater influence (Fig.4)
- No global phenomenon (Fig.6)
 - The arch-vortex did not shed at frequency of the SJ
 - C_b was not powerful enough
 - Differing BL thicknesses

The global phenomenon shows atypical behavior requiring further investigation.

All images, photographs, and charts were taken and/or created by L. Mertzlufft.

Research Students Win Awards at State Science Fair, Mertzlufft to Compete at International Fair

MODEL UN AWARD OF DISTINCTION



March 15, 2024

High School Students Participate in Model UN Conference, Receive Award of Distinction



January 25, 2024

Friedman, Sullivan Accepted into NYSSMA All-States





February 6, 2024

Robotics Team Experiences Growth & Success, Preparing for State Competition

March 26, 2024

HS Students Win at Regional SkillsUSA, Advance to State Competition



March 19, 2024

Wood, Law Named Regional Art Show Winners



*Awarded The Albany Center
Gallery Membership Award*
Caleb Wood

Grade 10

Ms. Dolan's Digital Art Class



*Awarded The Opalka Gallery
Membership Award*

Clara Law

Grade 12

Mrs. Layden Advanced Studio Class

March 8, 2024

High School's TechFest = Success!





March 6, 2024

O'Rourke's OM Team Wins Regional Competition, Advances to States

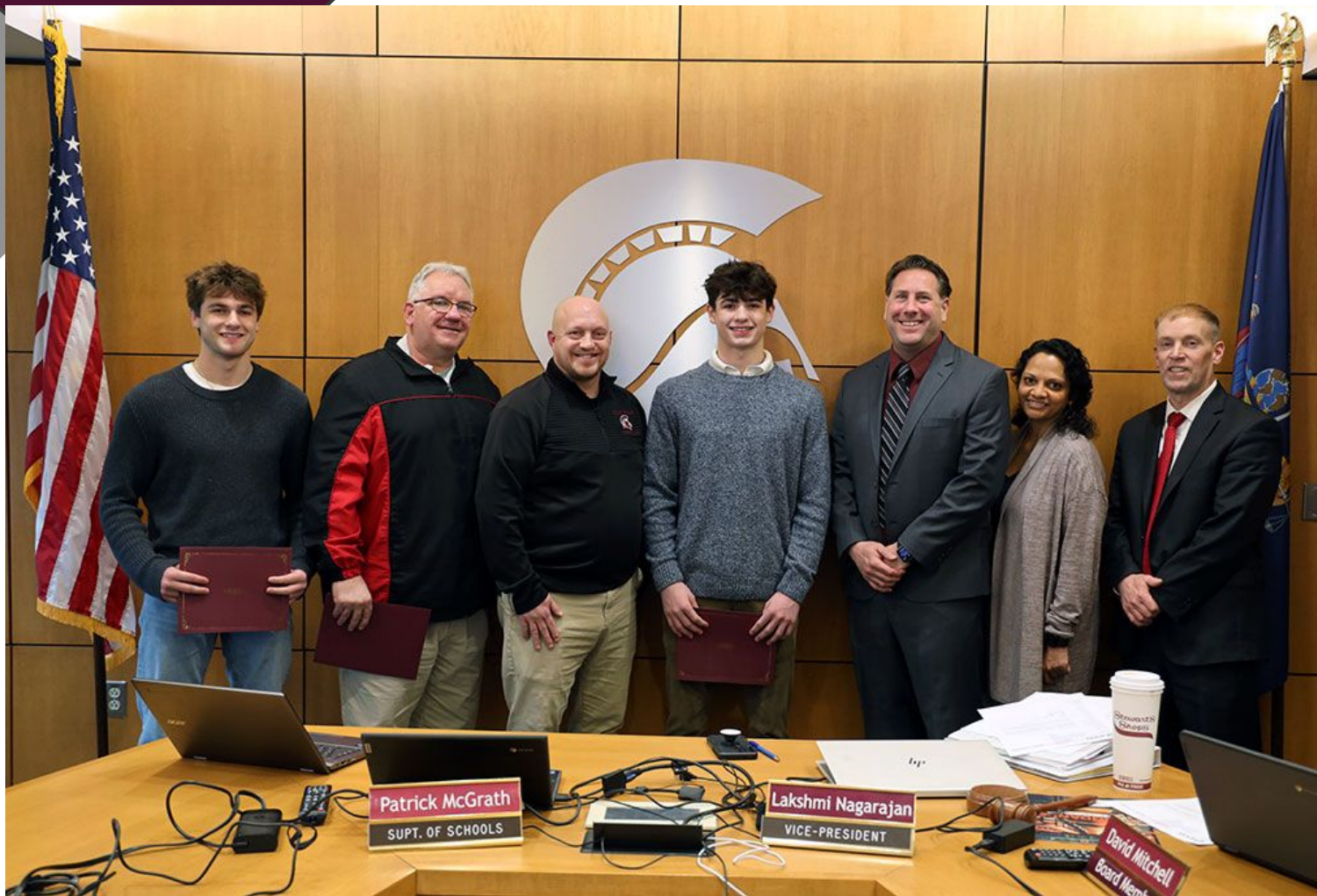


**NYS
Champs!**

**Girls
Volleyball
Class A**



**NYS
Champs!
Boys
Cross
Country
Class B**



**NYS
Champ!**

**Wrestling
145 lb.**



NYS Champs! Indoor Track 4x400 Relay





**First Ever
Section 2
Champs!**

**Unified
Bowling**

HIGHLIGHTS

- Science Research Students Advance to States
- Model UN Awards of Distinction
- HS Students Accepted into All-States
- Robotics Team Experiences Growth, Success
- HS Students Win at Regional SkillsUSA, Advance to States

HIGHLIGHTS

- Wood, Law Named Regional Art Show Winners
- HS Tech Fest = Success!
- Successful Fall & Winter Athletics (4 state titles)
- O'Rourke's Odyssey of the Mind Team Wins Regionals, Advances to States

HIGHLIGHTS

- Passage of 2023 Capital Project
- NYS Reward High School
- Community Service Opportunities



Burnt Hills-Ballston Lake Central School District

Published by Tara Boscherini-Mitchell · December 7, 2023 ·



What's a \$4,000 shopping spree look like? This.

·
·
·

O'Rourke NJHS students and advisor Mrs. Hills raised funds and researched toys before they shopped and shopped and shopped! All because they wanted to be a part of helping bring joy to children this holiday season. [#Toys4Tots](#) ❤️

[#SpartanPride](#)



Community Service Opportunities



Burnt Hills-Ballston Lake Central School District

Published by Tara Boscherini-Mitchell · November 16, 2023 ·

...

"I just wanted to do something kind for others," said 7th grade Spartan Cohen Kerby who used all of his allowance to buy 320 food items for the district's holiday food drive that supports local families. [#GreatDay2BeASpartan](#) ❤️



Community Service Opportunities



Burnt Hills-Ballston Lake Central School District

Published by Tara Boscherini-Mitchell · November 22, 2023 ·

A HUGE thank you to our community for donating nearly 6,000 food items for BH-BL's annual food drive. [#SpartanPride](#)



Community Service Opportunities



Burnt Hills-Ballston Lake Central School District

Published by Tara Boscherini-Mitchell · November 8, 2023 ·



O'Rourke imPACT members leave 🍁 a positive "impact" on the BH-BL community!

(Thank you imPACT advisors Nick Morocco, Kevin Debonis and Todd Bucci for the assist!)



Community Service Opportunities



Burnt Hills-Ballston Lake Central School District

Published by Tara Boscherini-Mitchell · November 9, 2023 ·

Thank you, Veterans. Thank you. 🇺🇸

#SpartanPride



Community Service Opportunities

+22

BUDGET FACTORS

- Inflation Impacts
- Foundation Aid & Student Population
- Growth in Student Needs
- Increase opportunities & enhance programming in sustainable and innovative ways

BUDGET AT A GLANCE

\$84,923,072

Proposed
2024-25 budget

4.11%

Budget-to-
Budget Increase

2.91%

Estimated tax
levy increase

BUDGET AT A GLANCE

1.98%

Estimated tax
rate increase

13TH

Year in a row
below tax cap

1.24%

10- Year Annual
Weighted Average tax
rate increase



Investing in BH-BL

INVESTING IN BH-BL

**Maintaining program additions
added over three years
through Federal grant funding:**

INVESTING IN BH-BL

MS Class Size Reduction

Additional sections in grades 6-8
including the half team in grades 7 & 8

INVESTING IN BH-BL

Expansion of 6th Grade Enrichment

New offerings to encourage interest in various academic areas.

INVESTING IN BH-BL

Elementary Math Specialists

Provide early intervention and support with mathematical skill development.

INVESTING IN BH-BL

Elementary Counseling Program

Comprehensive social-emotional curriculum including character development and career awareness, individual & group counseling

INVESTING IN BH-BL

HIGH SCHOOL TRANSITIONS PROGRAM EXPANSION

Redesign into two programs to provide support for special needs students, ages 14-22, developing academic and life skills.

INVESTING IN BH-BL

NEW INSTRUCTIONAL RESOURCES


K-5 ELA series aligned to the science of reading and current research around literacy acquisition.

Science materials aligned to the new standards, assessments & required lab activities.

INVESTING IN BH-BL

SPORTS & EXTRACURRICULAR

The continued support and growth of the
Girls Flag Football program and
a Unified Bocce team.



REVENUES & EXPENDITURES

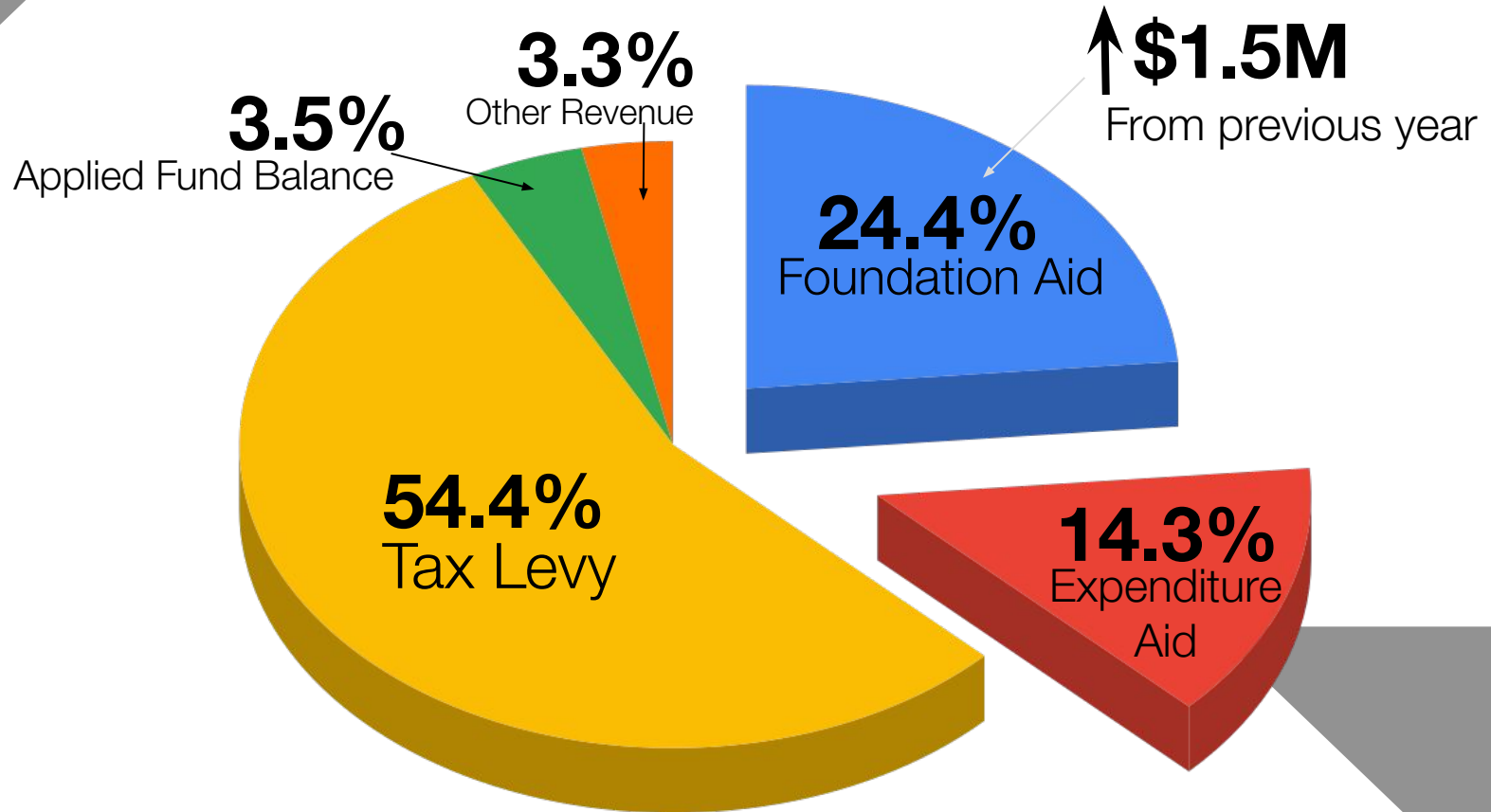
EXPENDITURES

	2023-24 budget	2024-25 budget	Change from '23-'24
Instructional Equipt.	\$1,662,747	\$1,676,958	0.85%
Transportation	\$2,448,000	\$2,579,152	3.04%
Salaries	\$40,253,971	\$43,516,372	8.10%
Employee Benefits & payroll taxes	\$18,718,134	\$19,207,227	2.61%
Debt Service & Interfund Transfers	\$6,994,208	\$7,193,783	2.85%
Curr/SPED	\$3,173,369	\$2,753,827	(13.22%)
Other	\$8,319,693	\$7,995,753	(3.89%)
Total	\$81,570,122	\$84,923,072	4.11%

REVENUES

Category	2024-25 budget	\$ Change from '23-24	% Change from '23-24
NYS Expenditure Aid	\$12,118,626	\$963,712	8.64%
NYS Foundation Aid	\$20,741,686	\$1,510,654	7.86%
Tax Levy	\$46,224,894	\$1,307,108	2.91%
Other Revenue	\$2,837,866	\$71,476	2.58%
Applied Fund Balance	\$3,500,000	(\$500,000)	(14.29%)
TOTAL	\$84,923,072	\$3,352,950	4.11%

REVENUE BREAKDOWN



TAX IMPACT HISTORY

School Year	Tax Levy Increase	Weighted Average Tax Rate Increase
2018-19	2.90%	1.80%
2019-20	2.90%	1.74%
2019-20	2.90%	1.74%
2021-22	2.30%	1.37%
2022-23	2.50%	1.82%
2023-24	1.12%	(0.08)%
2024-25	2.91%	1.98% - Estimated

TAX IMPACT HISTORY

	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	Town 10-Year Avg. Increase
n											
ton	3.80%	1.78%	-0.43%	2.09%	0.63%	2.72%	2.00%	2.07%	1.82%	-2.41%	1.41%
lton	-0.77%	0.47%	-0.12%	1.73%	3.22%	-1.76%	-1.57%	1.59%	-1.76%	3.35%	0.44%
on Park	0.64%	1.89%	-0.12%	-1.10%	2.33%	2.25%	5.39%	1.59%	0.91%	6.42%	2.02%
ville	-0.40%	2.96%	0.95%	1.05%	2.13%	2.53%	1.41%	0.40%	3.15%	-0.49%	1.37%
L Weighted Avg	1.16%	1.95%	0.15%	1.46%	1.80%	1.74%	1.32%	1.37%	1.56%	-0.08%	1.24%
Levy Increase	1.94%	2.68%	1.32%	1.96%	2.90%	2.90%	2.90%	2.30%	2.50%	1.12%	2.25%
able Difference to New struction	0.78%	0.73%	1.17%	0.50%	1.10%	1.16%	1.58%	0.93%	0.94%	1.20%	1.01%

ESTIMATED TAX IMPACT BY TOWN

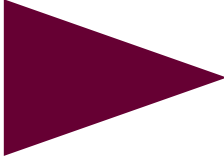
\$100.99	Ballston: Median Assessed Value \$213,050 (Market Value: \$302,199)
\$96.25	Charlton: Median Assessed Value \$158,400 (Market Value: \$288,000)
\$121.17	Clifton Park: Median Assessed Value \$141,400 (Market Value: \$207,942)
\$87.73	Glenville: Median Assessed Value \$178,500 (Market Value: \$273,492)

SCHOOL TAX EXEMPTIONS



STAR

Basic & Enhanced
Credits/Exemptions



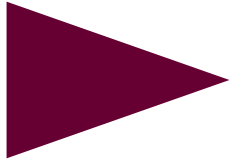
Income & Age
Low Income/Senior
Citizen Exemptions



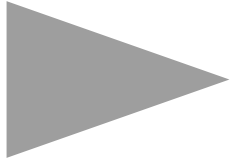
Veterans' & Firefighters'

Both veterans and firefighters can apply for
exemptions through their town assessor's office

BOARD OF EDUCATION ELECTION



Resident to select **two** candidates (3-year terms)



Meet-the-Board-Candidates Night, Wednesday,
May 15 at 7 pm, HS Library

ABSENTEE BALLOTS

- Qualified voters unable to vote in-person (illness, out of town) can vote via absentee ballot
- Complete the Absentee Ballot application (on website or at District Office)
- Absentee Ballots are due by **5 pm, Tuesday, May 21**

EARLY MAIL VOTING

- Qualified voters may now vote early by mail
- Complete the early mail ballot application and return between April 22 & May 14 (if ballot is to be mailed) or by May 20 if ballot is to be personally delivered
- Ballots due by **5 pm, Tuesday, May 21**

TUES., MAY 21

SCHOOL BUDGET VOTE

Polls open from 7 am to 9 pm
BH-BL High School Gym

