Proc Probability Calculator

Click-Power

PPM	3.5		1.459
Base Recharge (s)	10	Area Modifier	1.344
Cast Time (s)	2.17	MRT	10.000
Radius (ft)	9	*if it's not an AoE, set Radius = 0	
Arc (deg)	90	*if it's not a cone, set Arc = 360	
Desired Proc Probability	90.00%	Desired Recharge Amt.	-46.149%
Enhanced Recharge	0	Proc Probability	52.811%

Auto/Toggle/Pseudopet

PPM	7	
Radius (ft)	8	*If auto-power, make Radius = 0
Area Factor	2.200	
Area Modifier	1.900	
Proc Probability	61.404%	

Chain-Power

PPM	3.5	Area Factor	4.750
Base Recharge	60	Area Modifier	3.813
Cast Time	2.508	MRT	31.579
Max Targets	5	*AF = 1 + 0.75*MaxTargets	
Desired Proc Probability	90.00%	Desired Recharge Amt.	6.547%
Enhanced Recharge	90.00%	Proc Probability	52.155%

Legend

Legend	
Input	edit
Formula Fields	don't edit

Proc or DMG Enhancement?

Base Damage	100	
Level	50	

Percentages	Standard	Epic
PPM	3.5	4.5
Proc Damage:	71.75	107.09
Click	37.892%	72.714%
A/T/P	22.029%	42.272%
Chain	37.421%	71.810%

Special thanks to Replacement for this addition

https://forums.homecomingservers.com/topic/5290-procs-per-minute-ppm-information-guide/

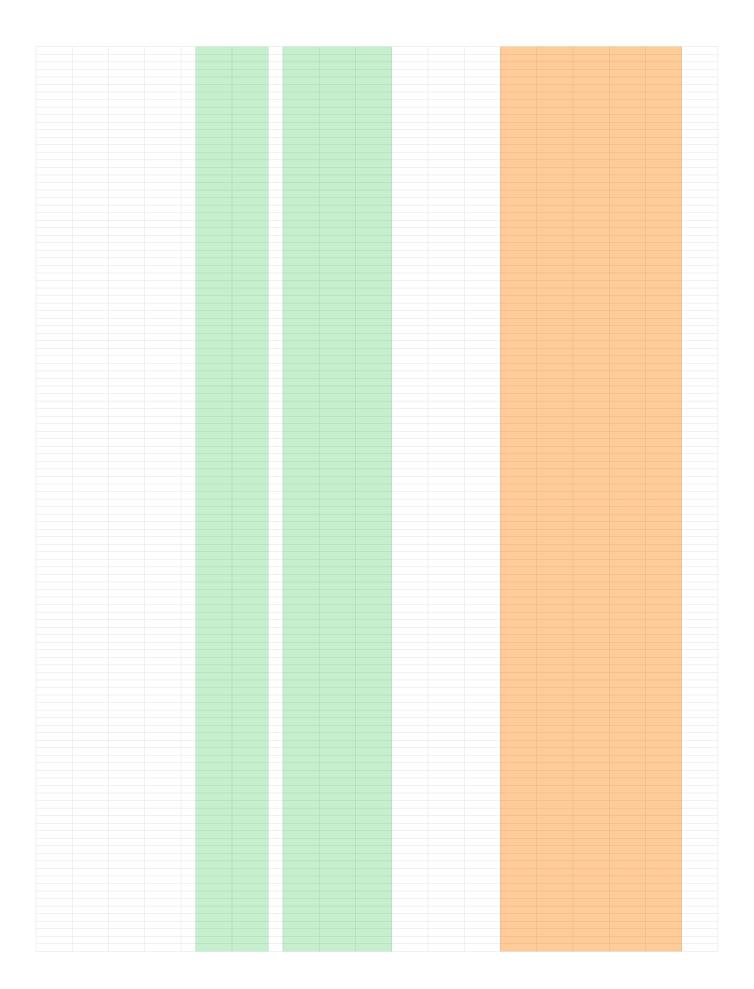## Proc or DMG Enhancement Calculator

Calculate the equivalent amount of added Damage Enhancement a Proc provides. Use this to determine if it is better to slot another Damage Enhancement or to use a Proc.
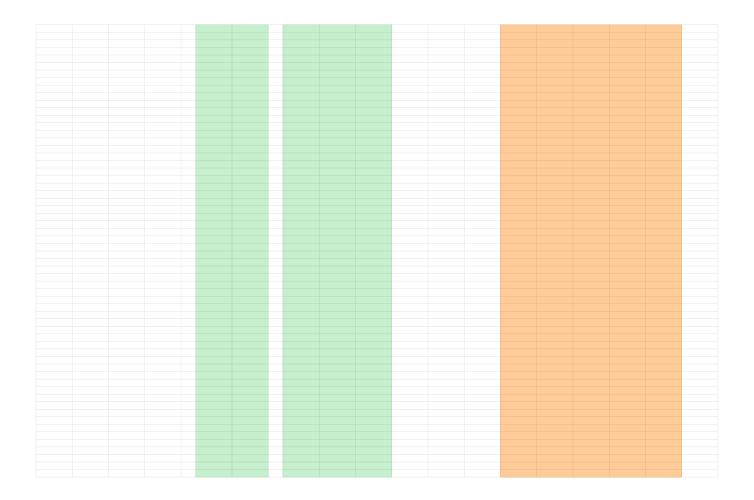
Instructions
- Input the base amount of damage the power does (at your selected level, with no buffs/enhancements)
- Select your Level (Damage Procs scale by level)
- Input the PPM amounts for Standard and Epic damage procs
- Equivalent Damage Enhancement percentages will calculate based on the inputs of the Proc Probability Calculators.

Proc Damage

Combat Level	Epic Damage	Damage	Combat Level	Epic Damage	Damage
50	107.09	71.75	25	58.69	39.32
49	106.78	71.54	24	55.86	37.43
48	106.47	71.34	23	53.07	35.55
47	105.96	71.00	22	50.31	33.70
46	105.26	70.52	21	47.59	31.89
45	104.36	69.92	20	44.93	30.11
44	103.27	69.19	19	42.34	28.37
43	102.00	68.34	18	39.81	26.67
42	100.55	67.37	17	37.35	25.03
41	98.94	66.29	16	34.97	23.43
40	97.16	65.10	15	32.68	21.89
39	95.23	63.81	14	30.47	20.41
38	93.17	62.42	13	28.35	18.99
37	90.97	60.95	12	26.31	17.63
36	88.65	59.40	11	24.38	16.33
35	86.23	57.77	10	22.53	15.10
34	83.71	56.08	9	20.78	13.92
33	81.10	54.34	8	19.12	12.81
32	78.43	52.55	7	17.55	11.76
31	75.69	50.71	6	16.08	10.77
30	72.91	48.85	5	14.69	9.84
29	70.09	46.96	4	13.39	8.97
28	67.25	45.06	3	12.18	8.16
27	64.39	43.14	2	11.05	7.40
26	61.54	41.23	1	10.00	6.70

Your Power Information

Name	Cast Time	Base Recharge	Duration
Chrono Shift	2.03	360	90

Name	Recharge Time	Rech+Arcana	Perma?
Chrono Shift	89.920	92.164	Somewhat

How Much Recharge to become Perma?

Name	Cast Time	Base Recharge	Duration
Hasten	0.73	450	120
Fully Perma (include Cast Time)		Mostly Perma (ignore Cast Time)	
277.91%		275.00%	

https://forums.homecomingservers.com/topic/12685-recharge-guide/

Description:
This tool will allow you to calculate the exact time to recharge a power based on its Base Recharge, your Permanent Recharge Buffs (Base is 100%, then you have enhancements, set bonuses, etc), and Temporary Recharge buffs. If your power has a Duration, you can also determine whether or not its effects will be permanent.

Input the details of your power in the "Your Power Information" on the top left. Then, insert the Permanent Recharge buffs you have in your build (Name is not required, the Amount % is). The Permanent Recharge buffs can be combined if you like. Finally, input the Temporary Recharge Buffs individually (do not combine). Once again, the Name is not needed for the Temporary Recharge Buffs (it's a nice to have), but the Amount and Duration are required.

The tool will sort your Temporary Recharge Buffs in columns O through S, then will run some iterative calculations to determine what the final recharge will be. You recharge will always be the final calculation.

Whatever you do, don't edit the Calculation cells (orange), that can easily break the tool

Permanent Recharge Buffs

Name	Amount (%)
Base	100.00%
Enhancements	95.90%
Set Bonuses	60.00%
Quick Reflexes	0.00%

Temporary Recharge Buffs

Name	Amount (%)	Duration
Hasten	70.00%	120
Chrono Shift	50.00%	90
Ageless10	40.00%	10
Ageless30	10.00%	30
Ageless60	10.00%	60
Ageless120	10.00%	120

Legend	
Input	* Edit this
Calculation	* Don't edit this
Fixed	* Don't edit this

Sorted Temporary Buffs (which can be treated as permanent?)

Name	Amount (%)	Sorted Duration	New Permanent	Iterative Calculations	Initial Calculation
Hasten	70.00%	120	325.90%	88.98435103	80.50019539
Ageless120	10.00%	120	335.90%	89.90771063	
Chrono Shift	50.00%	90	385.90%	89.91966831	
Ageless60	10.00%	60	385.90%	89.91966831	
Ageless30	10.00%	30	385.90%	89.91966831	
Ageless10	40.00%	10	385.90%	89.91966831	

Pylon Time DPS Calculator

Traditional Formula

Hit Points	30677.15	
Regen (HP/sec)	102.2572	
Resistance	20.00%	
Time	140.000	**DPS**
DPS	342.000	**Time**

DPS	401.725
Time	179.040

New Formula

Hit Points	30677.15	
Regen (HP/sec)	102.2572	
Resistance	20.00%	
Time-start	0.000	**DPS-worst**
Time-1st DMG	2.000	**DPS-mid**
Time-end	255.000	**DPS-best**

DPS-worst	269.623
DPS-mid	270.681
DPS-best	271.746

NOTES:

1) The New Formula incorporates where regeneration ticks land to determine a more accurate estimation of your DPS.
   The Traditional Formula assumes the Pylon is regenerating some hit points every second, which is not true.

2) Although it wouldn't be difficult to implement, regeneration debuffs are not factored into the calculation.

3) The New Formula offers a range of outcomes. Based on the limitations of time stamps only showing down to
   whole second accuracy, the DPS-worst and DPS-best capture the range of times by assuming time
   events occured at the extremes of a whole second block. The DPS-mid assumed all times occured
   exactly at the half-second mark of each time recording.

4) Fun fact, it's possible to have a slower time but actually have a higher DPS. If an extra regen tick occurs, causing
   you to have to do more total damage, it's possible to make up in average DPS if you can kill fast enough
   on the extra tick of health. Use 2s for 1st damage, and compare end times of 255s and 258s to see for yourself

https://forums.homecomingservers.com/topic/871-pylon-damage-thread/?do=findComment&comment=219550

T4 Assault Hybrid Comparator

Click Power

Power	Base Damage	Base Cooldown	Cast Time	Radius	Arc	Enhanced Recharge
KoB	200	25	2.23	0	0	0.00%

Core (select)	Core 75% DMG	Radial Dbl-Hit DMG	Double-Hit Chance	Net Difference
75%	150	186.764	90.00%	-18.088

Core Wins	Radial Wins

Toggle/ Pseudopet

Power	Base Damage	Activate Period	Radius
Mud Pots	9.51	2	8

Core (select)	Core 75% DMG	Radial Dbl-Hit DMG	Double-Hit Chance	Net DPS
75%	7.133	4.284	52.63%	3.341

Notes:

This tool looks at which version of Assault Hybrid is best based on specific attacks (only T4 is currently shown)

Toggle/Pseudopet will almost ALWAYS be best with Core...the proc damage and proc probability for Radial on Toggle/Pseudopet powers is horrible.

https://forums.homecomingservers.com/topic/7404-what-the-hell-is-doublehit-a-hybrid-assault-guide/

Assault Radial Formulas

Tier	PPM	Scale		Click Attack	
Tier 2 (R.G)	2	0.2		Click Attack	Damage = Scale x 0.2 x [0.8 x minmax(Recharge, 1s, 30s) + 1.8] x 107.09 / AreaFactor
Tier 3 (P.C.G)	4	0.1		Toggle/Pseudo	Damage = Scale x 0.11 x minmax(ActivationPeriod, 0s, 2s) x 107.09 / AreaFactor
Tier 3 (P.R.G)	4	0.2			AreaFactor = 1 + Radius x (11 x Arc + 540) / 30,000
Tier 3 (T.R.G)	4	0.3			
Tier 4 (R.E.)	6	0.4			

Cancel-on-Miss DoT Calculator

			Legend		Ticks	Prob(X=Ticks)	Prob (X ≥ Ticks)	Prob (X < Ticks)
Probability to Tick	75%		Input	* Edit this	0	25.00%	100.00%	0.00%
max # of Ticks	4		Calculation	* Don't edit this	1	18.75%	75.00%	25.00%
Damage per Tick	0.137				2	14.06%	56.25%	43.75%
					3	10.55%	42.19%	57.81%
Average # Ticks	2.0508				4	31.64%	31.64%	68.36%
Average Damage	0.2810				5	0.00%	0.00%	100.00%
					6	0.00%	0.00%	100.00%
					7	0.00%	0.00%	100.00%
					8	0.00%	0.00%	100.00%

https://forums.homecomingservers.com/topic/15370-interface-damage-over-time-dot-procs-how-to-quantify-their-effects/

Description:
There are some Damage-over-Time (DoT) effects in the game that are cancel-on-miss. This means each tick of damage has a chance to fail, and if it does, the DoT will stop. The purpose of this tool is to answer two questions: "How many ticks of damage on average can I expect from a cancel-on-miss DoT?" and "How much damage on average can I expect from a cancel-on-miss DoT?". Top-Left you input the Probability of Success for each tick, the maximum number of ticks you can achieve, and the amount of damage each tick would do. Below it, the average number of ticks and the average damage are calculated for you. To the right, the probability of exactly X ticks is calculated, and the cumulative probability of at least X ticks is shown. The last column is used for calculating the Probability of less than X ticks occuring.

Common Example:
Each Interface DoT are cancel-on-miss and can do up to 5 ticks of damage. They come in 3 variants: 25% chance to tick, 50% chance, and 75% chance. They also come in two strengths of damage: Minor (10.71 damage per tick) and Moderate (13.39 damage per tick). If you use T4 Reactive Radial (75% chance), you can expect on average 2.288 ticks of damage (30.64 average damage), but if you use T4 Reactive Core (25% chance), you can expect on average only 0.333 ticks of damage (4.46 average damage).

Ticks	Prob(X=Ticks)	Prob (X ≥ Ticks)	Prob (X < Ticks)
9	0.00%	0.00%	100.00%
10	0.00%	0.00%	100.00%
11	0.00%	0.00%	100.00%
12	0.00%	0.00%	100.00%
13	0.00%	0.00%	100.00%
14	0.00%	0.00%	100.00%
15	0.00%	0.00%	100.00%
16	0.00%	0.00%	100.00%
17	0.00%	0.00%	100.00%
18	0.00%	0.00%	100.00%
19	0.00%	0.00%	100.00%
20	0.00%	0.00%	100.00%
21	0.00%	0.00%	100.00%
22	0.00%	0.00%	100.00%
23	0.00%	0.00%	100.00%
24	0.00%	0.00%	100.00%
25	0.00%	0.00%	100.00%
26	0.00%	0.00%	100.00%
27	0.00%	0.00%	100.00%
28	0.00%	0.00%	100.00%
29	0.00%	0.00%	100.00%
30	0.00%	0.00%	100.00%
31	0.00%	0.00%	100.00%
32	0.00%	0.00%	100.00%
33	0.00%	0.00%	100.00%
34	0.00%	0.00%	100.00%
35	0.00%	0.00%	100.00%
36	0.00%	0.00%	100.00%
37	0.00%	0.00%	100.00%
38	0.00%	0.00%	100.00%
39	0.00%	0.00%	100.00%
40	0.00%	0.00%	100.00%
41	0.00%	0.00%	100.00%
42	0.00%	0.00%	100.00%
43	0.00%	0.00%	100.00%
44	0.00%	0.00%	100.00%
45	0.00%	0.00%	100.00%
46	0.00%	0.00%	100.00%
47	0.00%	0.00%	100.00%
48	0.00%	0.00%	100.00%
49	0.00%	0.00%	100.00%
50	0.00%	0.00%	100.00%
51	0.00%	0.00%	100.00%
52	0.00%	0.00%	100.00%
53	0.00%	0.00%	100.00%
54	0.00%	0.00%	100.00%
55	0.00%	0.00%	100.00%
56	0.00%	0.00%	100.00%
57	0.00%	0.00%	100.00%
58	0.00%	0.00%	100.00%
59	0.00%	0.00%	100.00%
60	0.00%	0.00%	100.00%
61	0.00%	0.00%	100.00%
62	0.00%	0.00%	100.00%
63	0.00%	0.00%	100.00%
64	0.00%	0.00%	100.00%
65	0.00%	0.00%	100.00%
66	0.00%	0.00%	100.00%
67	0.00%	0.00%	100.00%
68	0.00%	0.00%	100.00%

Cancel-on-Miss DoT Calculator

					Ticks	Prob(X=Ticks)	Prob (X ≥ Ticks)	Prob (X < Ticks)
Probability to Tick	75%		Legend		0	25.00%	100.00%	0.00%
max # of Ticks	4		Input	* Edit this	1	18.75%	75.00%	25.00%
Damage per Tick	0.137		Calculation	* Don't edit this	2	14.06%	56.25%	43.75%
					3	10.55%	42.19%	57.81%
Average # Ticks	2.0508				4	31.64%	31.64%	68.36%
Average Damage	0.2810				69	0.00%	0.00%	100.00%
					70	0.00%	0.00%	100.00%
					71	0.00%	0.00%	100.00%
					72	0.00%	0.00%	100.00%
					73	0.00%	0.00%	100.00%
					74	0.00%	0.00%	100.00%
					75	0.00%	0.00%	100.00%

Enter Total Debuffs

Type	Amount
Resistance	19.20%
Resistance (unresistable)	0.00%
Damage	6.75%
Damage (unresistable)	6.75%
Enemy Con	0
Purple Patch Effect	100.00%

Enter Target's Original Resistance / Target's Final Debuffs

Type	Resistance	Final Resistance Debuff	New Resistance	Final Damage Debuff
Smashing	0.00%	19.20%	-19.20%	14.80%
Lethal	10.00%	17.28%	-7.28%	13.99%
Fire	25.00%	14.40%	10.60%	12.78%
Cold	50.00%	9.60%	40.40%	10.77%
Energy	75.00%	4.80%	70.20%	8.76%
Negative	85.00%	2.88%	82.12%	7.96%
Psionic	87.00%	2.50%	84.50%	7.80%
Toxic	90.00%	1.92%	88.08%	7.55%

Legend

Input	edit
Drop Down	edit
Calculation	don't edit

Purple Patch Modifier

Crit Level	Effect
+9	0.04
+8	0.05
+7	0.08
+6	0.15
+5	0.30
+4	0.48
+3	0.65
+2	0.80
+1	0.90
0	1.00
-1	1.11
-2	1.22
-3	1.33
-4	1.44
-5	1.55
-6	1.66
-7	1.77
-8	1.88
-9	2.00

Enter Total Debuffs

Type	Amount
Resistance	153.05%
Resistance (unresistable)	20.25%
Debuff	20.00%
Debuff (unresistable)	0.00%

Enter Target's Original Debuff Resistance / Target's Final Debuffs

PP	Type	Resistance	Final Resistance Debuff	New Debuff Resistance	Final Debuff
1.00	General +0	95.00%	58.90%	36.10%	12.78%
1.00	AV +0	85.00%	74.20%	10.80%	17.84%
0.48	General +4	0.00%	90.32%	-90.32%	18.27%
0.48	AV + 4	87.00%	26.41%	60.59%	3.78%

Enter Total Debuffs

Type	Amount
Resistance	0.00%
Resistance (unresistable)	0.00%
Debuff	46.88%
Debuff (unresistable)	0.00%

Enter Target's Original Debuff Resistance / Target's Final Debuffs

PP	Type	Resistance	Final Resistance Debuff	New Debuff Resistance	Final Debuff
1.00	General +0	0.00%	0.00%	0.00%	46.88%
1.00	AV +0	85.00%	0.00%	85.00%	7.03%
0.48	General + 4	0.00%	0.00%	0.00%	22.50%
0.48	AV + 4	87.00%	0.00%	87.00%	2.93%

Notes/Description   https://forums.homecomingservers.com/topic/21251-how-to-calculate-debuffs/

This calculator was originally developed as a way to calculate the final damage debuff of an enemy's damage type after factoring in the enemy's resistance to that damage type and the resistance debuffs applied to the enemy.

The tool was then expanded to apply the same calculations for debuffs other than damage. For instance, and enemy may have a resistance to Regeneration debuffs and you might apply a resistance debuff to Regeneration [e.g. Res(Regeneration)]. The resistance debuff to regeneration acts the same way as a resistance debuff to damage: your Regeneration Debuffs will become stronger much like how Damage Debuffs will become stronger.

The top calculator is intended for evaluating the Resistance debuff and/or Damage debuff of an enemy. You input your resistance debuffs, both resistable and unresistable (although unresistable resistance debuffs are incredibly rare and likely a bug). You also input your damage debuffs, both resistable and unresistable. Finally, you select the enemy's con level for purposes of applying the purple patch modifier. You then input the enemy's resistance to each damage type and the calculator will output the final amount of resistance debuff, the new resistance of the enemy, and the final damage debuff of the enemy.

The bottom 2 calculators are the same. They are used for calculating the final debuff (regeneration, to-hit, defense, etc) when factoring that enemy's resistance to that type of debuff and when factoring in your resistance debuffs applied to that type of debuff. That is a mouthful, but here's an example. Let's say an enemy has a 50% resistance to recovery debuffs. You apply a 25% Res(Recovery) debuff on the enemy. Now their resistance to recovery becomes 50% x (1 - 50%*25%) = 37.5%. Next, you apply an 80% recovery debuff on this enemy. They can only resist 37.5% of that debuff and will now have their recovery debuffed by 80% x (1 - 80%*37.5%) = 50%. Those calculations are what you are able to do with the bottom 2 calculators.

Just like before, you input the resistance debuff amount (both resistable and unresistable), and you input the debuff amount (both resistable and unresistable). Next, you are able to run up to 4 calculations using those numbers. You input the Purple Patch Effect and the Resistance that the enemy has to this particular debuff. The Final Resistance Debuff, New Debuff Resistance, and Final Debuff Amount all get calculated for each of the 4 scenarios.

Select Your Archetype

Archetype	*Brute*

Enter Your Health Remain...

Max HP Boost (%)	0.00%
Regeneration (%)	100.00%
Additional Heal over Time (HPS)	0

Enter Your Debuffs

Damage Debuff	-50.00%
To Hit Debuff	0.00%

Enter Your Enemy's Attack Info

Attack Damage Per Second	1000
Desired Survival Duration (seconds)	600
Attack Type	*Melee*
Damage Type	*Smashing*
Enemy To Hit	50.00%
Enemy Accuracy Modifier	1.00
Enemy Type	*Boss, Elite Boss, Sniper*
Enemy Relative Level	*+3*

Bodyguard Mode — Mastermind only

Number of Pets	6
Bodyguard Damage Taken	100.00%

Enter Your Def/Res Values

Type	Defense	Resistance
Melee	0.00%	0.00%
Ranged	0.00%	0.00%
AoE	0.00%	0.00%
Smashing	0.00%	0.00%
Lethal	0.00%	0.00%
Fire	0.00%	0.00%
Cold	0.00%	0.00%
Energy	0.00%	0.00%
Negative	0.00%	0.00%
Psionic	0.00%	0.00%
Toxic	0.00%	0.00%

Legend

Input	edit
Drop-Down	edit
Calculation	don't edit
Fixed Value	don't edit

Max Values for your AT

HP (base)	1499.3
HP (max)	3212.7
Regeneration (max)	2000.00%
Resistance (max)	90.00%

Your Health Calculations

Resistance	0.00%
Defense	0.00%
Max Health	1499.3
Regen Period (5% HP every X sec)	12.000
HP per Regen Tick	74.965
HP/sec	6.247

Your Damage Taken Calculations

Damage Taken (after Resistance)	1762.25
Total Accuracy Mods (product)	1.69
Total ToHit Mods (sum)	50.00%
Probability to Hit	84.50%

Your Survivability Calculation

Time until Death (seconds)	1.01
Max DPS for Survival Duration	5.87
Survivability Score	0.75
Immortality Score	4.20
Average Damage Taken Per Second	1489.101

Time until Death

	Melee	Ranged	AoE	No Position
Smashing	1.01	1.01	1.01	1.01
Lethal	1.01	1.01	1.01	1.01
Fire	1.01	1.01	1.01	1.01
Cold	1.01	1.01	1.01	1.01
Energy	1.01	1.01	1.01	1.01
Negative	1.01	1.01	1.01	1.01
Psionic	1.01	1.01	1.01	1.01
Toxic	1.01	1.01	1.01	1.01

Max DPS for Survival Duration

	Melee	Ranged	AoE	No Position
Smashing	5.87	5.87	5.87	5.87
Lethal	5.87	5.87	5.87	5.87
Fire	5.87	5.87	5.87	5.87
Cold	5.87	5.87	5.87	5.87
Energy	5.87	5.87	5.87	5.87
Negative	5.87	5.87	5.87	5.87
Psionic	5.87	5.87	5.87	5.87
Toxic	5.87	5.87	5.87	5.87

Survivability Score

	Melee	Ranged	AoE	No Position
Smashing	0.75	0.75	0.75	0.75
Lethal	0.75	0.75	0.75	0.75
Fire	0.75	0.75	0.75	0.75
Cold	0.75	0.75	0.75	0.75
Energy	0.75	0.75	0.75	0.75
Negative	0.75	0.75	0.75	0.75
Psionic	0.75	0.75	0.75	0.75
Toxic	0.75	0.75	0.75	0.75

Immortality Score

	Melee	Ranged	AoE	No Position
Smashing	4.20	4.20	4.20	4.20
Lethal	4.20	4.20	4.20	4.20
Fire	4.20	4.20	4.20	4.20
Cold	4.20	4.20	4.20	4.20
Energy	4.20	4.20	4.20	4.20
Negative	4.20	4.20	4.20	4.20
Psionic	4.20	4.20	4.20	4.20
Toxic	4.20	4.20	4.20	4.20

Archetype Information (Based on Paragon Wiki)

AT	HP (base)	HP (max)	Regeneration (max)	Resistance (max)	HP Boost max	Regeneration (base)
Blaster	1204.8	1847.3	2000%	75%	53%	12.00
Controller	1017.4	1606.4	2000%	75%	58%	12.00
Defender	1017.4	1606.4	2000%	75%	58%	12.00
Scrapper	1338.6	2409.5	3000%	75%	80%	12.00
Sentinel	1204.8	2088.3	2000%	75%	73%	12.00
Tanker	1874.1	3534	2500%	90%	89%	12.00
Peacebringer	1070.9	2409.5	2000%	85%	125%	12.00
Warshade	1070.9	2409.5	2000%	85%	125%	12.00
Corruptor	1070.9	1606.4	2000%	75%	50%	12.00
Dominator	1017.4	1606.4	2000%	75%	58%	12.00
Mastermind	803.2	1606.4	2000%	75%	100%	12.00
Brute	1499.3	3212.7	2000%	90%	114%	12.00
Stalker	1204.8	2088.3	3000%	75%	73%	12.00
Arachnos Soldier	1070.9	2409.5	2000%	85%	125%	10.00
Arachnos Widow	1070.9	2409.5	2000%	85%	125%	10.00

Critter Rank

Critter Rank	Acc Mod
Minion	1.00
Lieutenant	1.15
Boss, Elite Boss, Sniper	1.30
Monster, GM, AV	1.50

Critter Level	Acc Mod	To Hit Mod	Purple Patch	Purple Patch (Enemy)
-3	1.00	-27%	1.33	0.65
-2	1.00	-19%	1.22	0.80
-1	1.00	-10%	1.11	0.90
0	1.00	0%	1.00	1.00
+1	1.10	0%	0.90	1.11
+2	1.20	0%	0.80	1.22
+3	1.30	0%	0.65	1.33
+4	1.40	0%	0.48	1.44
+5	1.50	0%	0.30	1.55
+6	1.50	5%	0.15	1.66
+7	1.50	10%	0.08	1.77
+8	1.50	15%	0.05	1.88
+9	1.50	20%	0.04	2.00
+10	1.50	40%	0.03	2.10

Notes on how to use the spreadsheet

1) Make sure you know what you can or cannot edit. The fields with the light green background are supposed to be edited. Everything else, no.
2) There are 5 drop-down menus used for looking up info for the calculations: Archetype, Attack Type, Damage Type, Enemy Type and Enemy Relative Level.
   Click on the option you want and the fields will update
3) Enemy To-Hit is typically 50%. Incarnate Trial enemies will have a 63.75% To Hit modifier, so feel free to adjust as necessary.
   This is why you hear 59% defense is the incarnate softcap
4) I use 1000 Attack Damage per second because it is a nice easy number. Adjust it to whatever you deem appropriate.
5) If you regenerate more HP/sec than the Average Damage Taken/sec, then you will NEVER die. Obviously
6) The values used in the Archetype Information field is all based on numbers I found on Paragon Wiki, which is outdated.
   If you know these numbers are wrong, feel free to correct it.
7) Added the ability to select type of enemy and relative level of the enemy. If you don't want those modifiers, select Minion and +0
8) Added Bodyguard Mode for Mastermind only
9) Added Purple Patch. This will impact the strength of the debuffs you entered (ToHit, Damage) and it will give a damage bonus to the enemy.
https://forums.homecomingservers.com/topic/12212-the-survivability-tool/

Formulas | Constants

Damage Formula: Scale = 0.2 x (0.8 x Recharge + 1.8) / AreaFactor

Endurance Formula: END = 2 x (0.8 x Recharge + 1.8) x EndConstant x ATConstant

	Recharge Time	AT End Constant	Area Factor *	Scale	Endurance *
0.2102425876	7.5	Non-MM End Const	1.237	1.2614555256	8.112
	Scale	AT End Constant	Area Factor *	Recharge Time	Endurance *
0.09460916442	0.84	Non-MM End Const	1.237	4.24	5.402

*Uses Area Factor from K5   * Uses EndConstant from P3

PvP Damage Formula:

Scale = ((CastTime + InterruptTime) x 0.7 + Recharge x0.04 + 0.4) / AreaFactor

	Recharge Time	Cast Time	Interrupt Time	PvP Area Factor	Scale
0.2990566038	7.5	2.17	0	1.237	1.7943
0.1435471698				*Typically, Area Factor is 1.75 for AoEs, except skinny cones	

Accuracy/ToHit

Chance = (ToHit + (CombatMod - 1) - Defense) x Accuracy

ToHit	CombatMod	Defense	Accuracy	Chance To Hit
75.00%	1	0.00%	104.30%	78.23%

Damage Over Time (DoT) Calculator

Use this tool to calculate the reletive effectiveness of a DoT power when "Cancel on Miss" is set to False.

Scale	Duration	Period	Chance	Average Scale	Average Damage
0.2	4.1	1	100.00%	1.000	10.000

Endurance Formula for Status Effects

Endurance = EffectMod x DurationScale x EffectStrength x EndConsant x ATConstant

Effect	Description	Effect Mod	Duration (Scale)	Strength (%)	Endurance *
Snare	Walk Slower	1	10	100.00%	5.200
Slow	Slow attack rate	1.5	10	100.00%	7.800
Immobilize (100%	Cant walk	1	10	1	5.200
Sleep	Do nothing but ca	1	30	1	15.600
Stun (100% Slow)	Cant attack	1.5	10	1	7.800
Hold	Cant more or atta	2.5	10	1	13.000

* Uses EndConstant from P3
* Uses ATConstant from C3

https://forums.homecomingservers.com/topic/3199-design-formulas/

Area Factor Calculator

AF = 1 + Radius x (11 x Arc + 540) / 30000

Arc *	Radius ^	Area Factor
80	5	1.237

^ See note 2 for "gotcha" on melee cones
* For Sphere make Arc = 360

Damage Calculation:

DMG = Scale x LvlMod x ATMod

Scale	Level	AT Modifier	Damage
1.96	50	0.95	103.546

*Pulls from fixed values in Columns Z:AA

Formula for Animation Length Damage Multiplier:

y = 2 x CastTime / (1.50 + CastTime)

Cast Time	DMG Multiplier	New Scale *
2.53	1.256	1.584

* Calculates New Damage Scale from ES

Boolean Resistance:

NewDur = Dur / (1 + Res)

Original Dur	Targets Res	New Duration
20	200.00%	6.67

STR Only AttribMods that affect time

(Recharge Time, Interrupt Time)

Original Time	STR	New Time
360	70.00%	211.76

Endurance Discount:

NewEndCost = OrigEndCost / (1 + ENDDisc)

Orinal END Cost	STR End Disc.	New END Cost
25	132.00%	10.78

Formula for Blaster Strength Buff (Defiance)

Buff = 0.066 * CastTime / AreaFactor   Duration = 7.5 + CastTime

Cast Time	Area Factor *	Defiance Buff	Duration
2.17	1.237	11.58%	9.67

*Uses Area Factor from K5

AT and End Constants

Endurance Constant (EndConstant)	0.65	*Used in Endurance Calculations
Non-MM End Constant	0.8	
Mastermind End Constant	1	
Epic or Pool End Constant	1	

PvP Constants

Control Class PvP Hold Duration	4
Non-Control class PVP Hold Duration	2
PVP Elusivity Bonus	0.3

PVP Damage Modifiers

		Normal DMG offset	
		Activation Time DMG adjustment	
		Recharge DMG adjustment	
			AT Mod DMG adjustment

Archetype			
Tanker	0.4	0.7	0.04	1.3
Scrapper	0.4	0.7	0.04	1.1
Blaster	0.4	0.7	0.04	1.2
Defender	0.4	0.7	0.04	1.6
Controller	0.4	0.7	0.04	1.7
Brute	0.4	0.7	0.04	1.4
Stalker	0.4	0.7	0.04	1
Corrupter	0.4	0.7	0.04	1.4
Dominator	0.4	0.7	0.04	1.4
Mastermind	0.4	0.7	0.04	1.5
Kheld	0.4	0.7	0.04	1.2
Veat	0.4	0.7	0.04	1.2
Pet	0.4	0.7	0.04	1

PvE AT Damage Modifiers

Archetype	Melee	Ranged
Tanker	0.950	0.800
Scrapper	1.125	0.600
Blaster	1.000	1.125
Defender	0.550	0.650
Controller	0.550	0.550
Brute	0.750	0.750
Stalker	1.000	0.600
Corrupter	0.750	0.750
Dominator	1.050	0.950
Mastermind	0.550	0.550
Kheld	0.850	0.800
-- Nova	---	1.200
-- Dwarf	1.000	---
Veat	1.000	1.000
Sentinel	1.220	1.370

I25 PvP AT Damage Modifiers *

Archetype	Melee	Ranged
Tanker	1.04	0.83
Scrapper	1.32	0.75
Blaster	1.26	1.82
Defender	0.88	1.33
Controller	0.95	1.21
Brute	1.04	0.89
Stalker	1.04	0.80
Corrupter	1.04	1.33
Dominator	1.51	1.75
Mastermind	0.85	1.09
Veat	1.04	1.33
Sentinel	1.22	1.37

*Estimated

Level	Base Damage
50	55.6102
49	55.4552
48	55.3001
47	55.0473
46	54.7007
45	54.2642
44	53.7426
43	53.1404
42	52.4628
41	51.7150
40	50.9022
39	50.0299
38	49.1033
37	48.1279
36	47.1088
35	46.0511
34	44.9599
33	43.8398
32	42.6954
31	41.5310
30	40.3506
29	39.1582
28	37.9571
27	36.7508
26	35.5423
25	34.3344
24	33.1297
23	31.9305
22	30.7391
21	29.5574
20	28.3872

Notes:

1) The Level Modifier used for the damage calculation only selects between 20-50 because levels 1-19 have a normalizing factor that impacts the damage modifiers of the AT. I may incorporate this in the future, but for now I figure most will only care about Level 50 damage

2) For melee cones that are less than 20 feet, the design formula will reduce the radius by 2 ft. So a 7 ft cone will use 5 ft as its radius. This is for design formula purposes only, the actual area factor will use the actual radius

3) PvP Damage Modifier charts are shown mostly for completeness. The game used to not have PvP Damage Modifier Tables, but now they do (not sure when this changed). So the PvP Damage Formula Calculator simply calculates the scale. That scale then points to an AT specific PvP Damage Modifier Table. The numbers on that table I'm not sure about at this time.

+HP and Regeneration Proc Comparison Sheet

Archetype		Hit Points	P.T	Panacea	Imperv Skin Regen Tissue	Numina	P.T	Panacea	Imperv Skin Regen Tissue	Numina	Archetype	Melee Heal-Other Modifier
			Regeneration (Equivalent)				HP per proc (Equivalent)					
Blaster	Base	1204.8	60.00%	64.32%			60.240	64.575	25.10	20.08	Blaster	96.381
	Max	1847.3	39.13%	41.95%					38.49	30.79		
Controller	Base	1017.4	60.00%	93.09%			50.870	78.925	21.20	16.96	Controller	117.799
	Max	1606.4	38.00%	58.96%					33.47	26.77		
Defender	Base	1017.4	60.00%	105.78%			50.870	89.688	21.20	16.96	Defender	133.862
	Max	1606.4	38.00%	67.00%					33.47	26.77		
Scrapper	Base	1338.6	60.00%	57.89%			66.930	64.575	27.89	22.31	Scrapper	96.381
	Max	2409.5	33.33%	32.16%					50.20	40.16		
Tanker	Base	1874.1	60.00%	41.35%			93.705	64.575	39.04	31.24	Tanker	96.381
	Max	3534	31.82%	21.93%					73.63	58.90		
Peacebringer	Base	1070.9	60.00%	72.36%			53.545	64.575	22.31	17.85	Peacebringer	96.381
	Max	2409.5	26.67%	32.16%					50.20	40.16		
Warshade	Base	1070.9	60.00%	72.36%			53.545	64.575	22.31	17.85	Warshade	96.381
	Max	2409.5	26.67%	32.16%					50.20	40.16		
Sentinel	Base	1204.8	60.00%	64.32%	25%	20%	60.240	64.575	25.10	20.08	Sentinel	96.381
	Max	2088.3	34.62%	37.11%					43.51	34.81		
Corruptor	Base	1070.9	60.00%	72.36%			53.545	64.575	22.31	17.85	Corruptor	96.381
	Max	1606.4	40.00%	48.24%					33.47	26.77		
Dominator	Base	1017.4	60.00%	93.09%			50.870	78.925	21.20	16.96	Dominator	117.799
	Max	1606.4	38.00%	58.96%					33.47	26.77		
Mastermind	Base	803.2	60.00%	117.92%			40.160	78.925	16.73	13.39	Mastermind	117.799
	Max	1606.4	30.00%	58.96%					33.47	26.77		
Brute	Base	1499.3	60.00%	51.68%			74.965	64.575	31.24	24.99	Brute	96.381
	Max	3212.7	28.00%	24.12%					66.93	53.55		
Stalker	Base	1204.8	60.00%	64.32%			60.240	64.575	25.10	20.08	Stalker	96.381
	Max	2088.3	34.62%	37.11%					43.51	34.81		
Arachnos Soldier	Base	1070.9	50.00%	50.25%			53.545	53.812	26.77	21.42	Arachnos Soldier	80.317
	Max	2409.5	22.22%	22.33%					60.24	48.19		
Arachnos Widow	Base	1070.9	50.00%	50.25%			53.545	53.812	26.77	21.42	Arachnos Widow	80.317
	Max	2409.5	22.22%	22.33%					60.24	48.19		

Notes:

This sheet makes to comparisons: It calculates the equivalent regeneration the +HP procs provide and compares to the Regeneration procs. It also calculates the equivalent HP per 20 seconds the Regeneration procs provide and compares it to the amount of HP produced from the +HP procs

The 20 seconds used for Regeneration comparisons is chosen because the +HP procs are 3 PPM which will average 1 proc per 20 seconds in auto powers

https://forums.homecomingservers.com/topic/19022-hpregen-proc-cheat-sheet/